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MICROTEACHING, MODELLING AND FEEDBACK AND THEIR EFFECTS ON PRE-SERVICE TEACHERS IN MUSIC

by

Ⓒ OTTOLENE RICORD

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submitted by Ottolene Ricord

in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Secondary Education.

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ABSTRACT

The purpose of the study was to describe and analyze the application of a systematic approach to the preparation of secondary music pre-service teachers. Specifically, the objectives for the study included: (1) devising a number of operational behaviors suitable for secondary music classes, (2) developing an observation instrument with which to assess the subjects' use of the behaviors, (3) devising an experimental situation in which to analyze the effects of modelling and feedback utilized in the treatment, (4) investigating the experimental subjects' thoughts concerning the treatment, and (5) comparing the behaviors used in the microteaching mini-lessons to those used in the Melab (Music Education Laboratory).

The last three objectives addressed the primary purpose of the study which was to investigate the effects of modelling and feedback on the acquisition of the defined teaching behaviors, while the first two objectives addressed the secondary purpose which was to investigate the 'direct instruction' behaviors in secondary music classes.

The quasi-experimental study employed both a pre-post test design and a descriptive section. A sample of 15 pre-service teachers; two experimental groups; and one control group were observed in a music laboratory situation for three hours prior to and after a treatment procedure. The results obtained from the Quest Observation Instrument yielded quantitative information concerning the mean score of thirty-one teaching behaviors, the time spent on classroom events i.e., drill, instructional activities, and classroom management, and the frequency of subjects' process and product questions. The quantitative information was gathered in three different music contexts: full rehearsals, sectionals and general music classes. The data results produced information regarding the effectiveness of the behaviors, their subsequent effect on the classroom events, and the appropriateness of the behaviors in different music contexts. All results were discussed in terms of academic engagement times.

The descriptive (qualitative) section of the study included a stimulated recall analysis of the experimental subjects' thoughts regarding the treatment process. The treatment consisted of modelled presentations on the thirty-one criterion behaviors and, in addition, the two experimental groups received microteaching practise on two mini-lessons with either supervisor written or verbal feedback. The information received from the interviews was concerned with behavior change and planning processes. In addition, thirteen behaviors (i.e., teaching style and interaction) common to both the pre-service group and a sample of sixty in-service teachers were compared. Taken together, the qualitative and quantitative data plus the comparison to the in-service teachers, provided a comprehensive picture of the effects of microteaching, modelling and feedback for the training of pre-service teachers.

Results obtained from the quantitative analysis gave evidence of the following: (1) all groups increased the time spent on drill and decreased the time on classroom management, (2) in addition to (1) above, the group receiving verbal comments increased the time spent on instructional activities which resulted in an increase of 13% in academic engagement time, (3) the control group scores which were due to the modelling effects, increased only drill time and decreased classroom management time, (4) all groups changed from process to product questions in the post-test, (5) all groups found direct instruction more beneficial for large group instruction (i.e., full rehearsal and general music) than for small groups (i.e., sectionals).

Results obtained from the qualitative analysis gave evidence for the following information regarding planning processes and behavior changes: (1) when the supervisor could aid in facilitating the subjects' information processing, (i.e., help the subjects in planning) the observed behaviors demonstrated in the Melab teachings and the intended behavior disclosed in the microteaching mini-lessons were congruous (i.e., what was planned, therefore, was then actually taught in the classroom), (2) the intended and observed behaviors which were not congruous with the subjects' receiving written feedback seemed to be due to inadequacies in planning, (3) verbal feedback was especially valuable in aiding students to plan content structure and sequencing, and assessing students' needs, however, few changes occurred in planning class interactions, (4) all subjects alluded to the benefits of viewing modelled presentations of the behaviors, (5) feedback was only effective if subjects attended to the significant cues presented in the modelled episodes, however, (6) teaching style and interaction behaviors can be achieved through pre-service training since the group receiving verbal comments received the same or significantly higher ratings in these behaviors when compared to the in-service teachers.

This study has demonstrated a significant relationship between covert mental processes and observable behaviors and their impact on instruction. Both overt and the relevant covert thought processes must be consciously mastered in pre-service education if effective teaching is to occur.

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CHAPTER I

THE PROBLEM

Introduction

Most people who enter the music education profession probably want to be good teachers. But perhaps the most difficult barrier to achieving this goal is the attainment of the skills necessary to teach effectively. In order to become a good music teacher, one must learn the skills necessary to elicit desired responses in children. Yarborough and Madsen (1976) have advocated that these skills are both musical and instructional. Brown (1975) gives the following rationale for mastering general teaching skills:

> Teaching, it is said, is an art and by implication, it can not be taught. Flying jumbo jets or performing heart transplants are also arts which bring together a wide range of skills. Yet no flying school or medical faculty expects its trainees to perform high level feats without first mastering the basic skills. Teaching does have a wide repertoire ... of skills .... In teacher education there is a temptation to sprinkle amorphisms of teaching in lectures and to rely heavily upon the classroom as the only training ground. A similar approach in flying or medicine would lead to highly publicized disasters. (p. 4).

Microteaching in simulated teaching situations has become a widely used technique in teacher skill training. By providing student teachers with a safe, controlled environment in which to practise behaviors, this technique prepares them to face 'real' situations with greater ability and confidence. In this scaled-down teaching encounter, a pre-service teacher focusses on specific behaviors while teaching a small group of pupils (5-10) or peers acting as pupils for a short period of time (10-20 minutes). He receives immediate feedback regarding his performance and then reteaches the lesson.

Several researchers, notably Brand (1977), Moore (1976), Yarborough and Madsen (1976) and Holt (1974) have found microteaching effective for providing training in music teaching behaviors. However, the elements encompassed in microteaching, notably modelling and feedback, are in need of further investigation.

Teaching research in the past twenty years has concentrated on teacher behaviors, instructional techniques, social climate of classrooms, objectives and curriculum as criteria for teaching effectiveness. However, although this research has been ample, much of it is dubious in methodology and its results often contradictory. Related to this issue, Dunkin and Biddle (1974) raise the question:

> Where is the knowledge that should constitute the core of teacher training? Where is the empirically based information that represents the science of teaching? (p. 11)

More recently Anderson and Brophy (1976), Evertson and Brophy (1976), and Good and Brophy (1973) have identified certain teaching behaviors as being important to teaching and learning outcomes. These findings have led to the formulation of several teaching models. One of importance is Rosenshine's (1976) 'direct instruction' model in which the behaviors are clustered around the teacher organizing and implementing instructional activities and outcomes. Although a number of studies have supported this model for elementary mathematics and reading classes (Gage, 1975b; Nuthall and Snook, 1973; Anderson and Brophy, 1976) further research in the area of appropriate context, content and grade is needed. Therefore, the present study will investigate the effects of direct instruction in secondary music classes.

Statement of the Problem

> Teacher education, both at the pre-service and the in-service level, should adopt as primary goals the development of the competencies needed to create and maintain the learning environment, to engage pupils in learning-related activities, and to implement the kind of instruction that research indicates is provided by effective teachers. (Rosenshine, 1979; p. 25).

Within this context, the main purposes of the study are to:

1. Investigate the effects of microteaching as a training device for undergraduate music education students.
2. Investigate the effects of direct instruction behaviors used by pre-service teachers in different secondary music classes.
3. Investigate the effects of feedback modes used in microteaching for training pre-service teachers in music instructional behaviors.
4. Investigate the effects of modelling used in microteaching for training pre-service teachers in music instructional behaviors.
5. Investigate the impact of the feedback modes on the thoughts of the pre-service teachers engaged in lesson planning.

Related to the above purposes, five research questions were asked in the present study:

1. How did the experimental teachers differ from the control teachers in their use of the criterion behaviors and what were the effects of such differences on the classroom?

To investigate the effects of microteaching, which consists of modelling and feedback, the experimental groups who were exposed to the modelling procedures and feedback modes were compared to the control group that was exposed only to modelling procedures.

2. What were the effects of the use of the criterion behaviors in different junior high music classrooms?

To investigate both the effectiveness of the behaviors and their effect on the various music classes two comparisons were calculated. The first comparison (i.e., effectiveness of behaviors) was discussed in terms of academic engaged times for (1) the experimental and control groups, and (2) the different music contexts (i.e., sectionals, full-rehearsal and general music). The second comparison (effects of the behaviors) was discussed in terms of the time allotted to the class events (drill, activities, class management for each group.

3. What effect did the feedback modes have on the behavior means exhibited by the two experimental groups?

To investigate the types of feedback used in microteaching the two experimental groups who were assigned to either the supervisor's verbal (Group A) or written comments (Group B) were compared.

4. Do the behavior means of the in-service teaching behaviors differ significantly from those of the pre-service teachers?

To investigate the effects of the treatment on teaching style and interaction behaviors (numbers 19-31), the means common to both the in-service Center of Research for Teaching (CRT) and pre-service teachers were compared. In order to investigate the effects of the treatment (i.e., modelling) the common behavior mean differences between the in-service pre-test and the pre-service post-test were compared. Another comparison between the in-service and pre-service pre-test behaviors demonstrated any group differences.

5. How did each type of feedback affect each subject?

To investigate the effects of feedback on each subject's teaching performance, the thoughts of the experimental subjects regarding lesson planning and behavior changes were explored.

Outline of the Study

The present study employs a quasi-experimental pre-post test design and a descriptive section. Two experimental groups and one control group were investigated in music classrooms using a pre-post treatment intervention method. Independent coders (trained observers) used an observation instrument which comprised, among other things, thirty-one behaviors. The pre- and post-test observation results were recorded, analyzed and compared. The descriptive (qualitative) section of the study includes a stimulated recall analysis of the experimental subjects' thoughts which were concerned with behavior change and planning processes.

Data in the study came from two sources: one from the observation of teacher behavior in music classrooms, the other from the stimulated recall interviews. The first source of experimental data recorded teacher behaviors in three different contexts: sectionals, full-rehearsals and general music. These results produced quantitative data which were subjected to statistical analysis in an effort to understand the effects of modelling and feedback in the treatment. A pre-post test design was employed for all groups to investigate the basic treatment of modelling. Further tests of significance were utilized with the two experimental and control groups to investigate the feedback modes. The two experimental groups in addition to receiving the modelling treatment also received either supervisor written or oral feedback during the microteaching of a music mini-lesson. In addition the experimental subjects' thoughts and comments concerning the entire treatment procedure were recorded and analyzed and resulted in data concerning behavior change and planning processes. Taken together, the two types of data yield a comprehensive understanding of the effects of microteaching, modelling and feedback in training for pre-service teaching behaviors.

Need for the Study

There are two main areas of investigation in the present study. The primary area is concerned with the effects of modelling and feedback on the acquisition of teaching skills. The secondary area is concerned with the effectiveness of 'direct instruction' behaviors for teaching secondary music classes.

In the present study, the technique of microteaching was employed in order to investigate modelling and feedback. The main components of microteaching are described below. Borg *et al*. (1970) describes microteaching as a three step process: (1) the learner observes a model teaching episode in which particular skills are demonstrated, (2) he attempts to shape his own behavior on that of the model, and (3) he receives feedback on his performance. The model is extremely important in Borg's definition and the present study addresses the need to further investigate its components. There is ample evidence suggesting that the way the model is presented, the conditions for viewing, and how the learning of a modelled event occurs is important. Bandura (1974) defines modelled learning as a process of transforming a modelled event into imaginal and memory codes. However, the conditions for presenting the modelled episode are in further need of investigation. Evidence is also available suggesting that not only modelling but also feedback have important effects on the learning of skills (behaviors) and the present study will explore both of these techniques as methods for providing training in undergraduate teaching skills.

The secondary purpose of the study was to investigate the appropriateness of 'direct instruction' behaviors for teaching secondary music classes. To investigate the appropriateness of these behaviors, it is necessary to determine the proportion of academically engaged minutes in the lessons taught. Rosenshine (1979) states, "student attention or engagement is obviously necessary for learning," (p. 33) therefore, the higher the proportion of academically engaged time in a classroom the greater the possibility for achievement gains by the students. In order to investigate the effectiveness of the behaviors, it was deemed necessary to collect student engagement times in the classroom as well as the time spent on class events (e.g., drill, classroom management, etc.). In the present study, the main vehicle for investigating (the effectiveness of) direct instruction behaviors is the proportion of student engagement time and the time spent on class events in instrumental full-rehearsal and sectional classes. In addition, a small sampling of data results is presented and discussed for general music classes.

In addition the secondary need for the study concentrates on investigating student teachers' thought processes when planning for direct instruction. During the past five years, there has been emphasis on the ways in which teachers' process instructional information. Although there have been a number of areas under investigation in teachers' thinking, the present study will focus on teacher planning.

Taylor (1970) concluded that planning should include content to be taught and the accompanying important contextual considerations (time, sequencing and resources). Other researchers such as Zahorik (1975) found that teachers should plan by making decisions about activities, while Morine (1975b) found that decisions involving class interaction are important in lesson planning. Since Morine found that 96% of a teacher's thoughts are concerned with planning, it is important to investigate the area of lesson planning in the training of education undergraduates.

In conclusion, if how teachers behave in the classroom is directed by what they think, it is important to investigate their behaviors and thoughts and their subsequent effects on classroom events.

Definition of Terms

1. Classroom events in the present study are a result of class descriptions of those occurrences in music classrooms including drill, instructional activities, classroom management, and interactions.
2. Context variables for the present study consist of three teaching settings: (1) sectional - teaching a particular division of an instrumental group (i.e., violins, woodwinds, brass); (2) full-rehearsal - teaching the entire instrumental group i.e., band or orchestra; and (3) general music - teaching aspects of music other than performance.
3. Criterion behaviors encompass all the behaviors used in the present study including those dealing with direct instruction, teaching style and interaction.

4. *Direct instruction* is instruction that is academically focussed, teacher directed, and uses sequential material. The direct instruction behaviors (numbers 1-18) which center around efficient classroom management skills, emphasis on task, and seatwork have been found effective in producing achievement gains. However, academically engaged minutes were used in place of achievement gains for the present study. In addition, the teacher's use of direct instructional behaviors resulted in classroom events which included drill, instructional activities and classroom management.

5. *Engagement time* is the time a student is attending to instruction in a particular content area. This is considered an important variable which influences student achievement.

6. *Feedback* is the information a student teacher receives after his attempt to imitate modelled patterns of teaching in a music class. Feedback was given only during the microteaching experience. The student teachers in the pilot study received one of three feedback modes and those in the final study received one of two modes.

7. *Feedback modes* consisted of three modes for the pilot study and two for the final study. For the pilot, the use of feedback included peers (comments on each other's teaching performance), forms (see Appendix C)~~, and~~ supervisors' verbal comments. For the final study, supervisors' verbal or written comments only were used.

8. *High inference behaviors* are teaching behaviors which do not involve student-teacher interaction (e.g., the teacher gains attention before starting the lesson). The behaviors (numbers 1-31)

are coded in the classroom observation system (see Quest Observation System, Appendix F) on the Likert-scale (1-5).

9. Instrumental instructional behaviors are all behaviors which occur systematically during an instrumental music lesson and are related to instruction (i.e., direct instruction), interaction and teaching style. Such systematic instruction takes place in three stages: getting the students' attention at the beginning of the class, maintaining the students' interest through interaction and activities, effectively ending the class. In addition, general teaching style and interaction behaviors were also used.

10. Interactions are those teaching behaviors which are involved in verbal instructional activity with children in the classroom. The interactions which included questioning, praise and criticism were recorded on the Observation Instrument in two places: the T.M.O. (Three Minute Observation) form and the High Inference Coding Sheet (behavior numbers 27-31), see Appendix F.

11. Interval means are the group behavioral mean scores which have been obtained from individual data using a Likert-like scale on the Quest Observation instrument.

12. Learning is a "relatively permanent change in behavior or behavioral potentiality that results from experience and cannot be attributed to temporary states induced by illness, fatigue or drugs." (Conners, 1978; p. 10).

13. Low inference behaviors are those found in the Instrumental Instructional Behaviors (Appendix E) which involve interactions between a teacher and a single child. These behaviors are

recorded on the T.M.O. Schedule and on the Likert scales of the last five behaviors of the Quest Observation System (Appendix F). Examples of these behaviors are: (1) teacher initiated interactive questions, (2) pupil selection, (3) students' correct or incorrect responses, and (4) praise or criticism by the teacher.

14. Manhattanville (MMCP) is an approach to teaching general music in grades one through twelve based on a spiral curriculum inter-relationship of musical composition concepts i.e. pitch, form, rhythm, timbre and dynamics. MMCP activities include composing, listening, playing and analyzing which are developed by using aural, dextrous and translative skills. The teaching process is illustrated in sample strategies which are presented in sixteen spirals which develop musical learning through skill acquisition. MMCP is founded on the principles of Piaget and Bruner. The main focus is on discovery learning which involves inductive, deductive and intuitive reasoning.

15. Manhattanville Model is a training program which was used in the pilot study for student teachers in music which combines the theory of the Manhattanville project with the advocated skills.

16. Microteaching is a procedure for practising instruction techniques in which the normal complexities of the classroom are reduced and the student teacher receives much feedback on his performance. The class size is normally four to eight students and the number of behaviors (skills) taught varies. Microteaching as part of the treatment in the present study

was practised by the experimental subjects following behavior lectures and modelled demonstrations.

17. Modelling is the process of transforming a modelled event into one's teaching behavior. In microteaching three stages are employed: first, the learner observes a model teaching episode which demonstrates particular teaching skills; second, the learner attempts to shape his behavior on that of the model; and third, the learner receives feedback on his performance. The experimental groups were subjected to all three stages, while the control group only participated in the first two.

18. Music behaviors include: conducting, knowledge of instruments and other such purely musical attainments which facilitate student learning in instrumental class situations.

19. Planning is the way in which a teacher prepares a lesson which systematically includes selecting a topic, stating an objective, considering steps or procedures to be followed and preparing instructional materials. For the present study, the teaching behaviors were developed to aid in arranging the classroom for instruction using the above components.

20. Stimulated recall is an introspective methodology using audio and/or visual cues to assist a subject to recall what he thought during his teaching of a lesson. Stimulated recall in the present study was conducted with the experimental subjects after supervisor feedback was administered.

21. Teaching skills are a cluster of behaviors related to teaching a music lesson and were recorded on a Likert scale by trained

observers. The skills which were used in the pilot study, were organized into three clusters based on their occurrence in the introduction, the body or the closure of the lesson and were sequenced. These skills included interaction and teaching style behaviors. The skills were demonstrated by the pre-service teachers and were then rated as to their effectiveness of implementation.

Limitations

The major limitations of the present study are:

1. The pre-service teachers involved represented a selected sample. No random sampling techniques were used in the study.
2. Classroom observations were of a relatively short time period.
3. While essentially a naturalistic study in character, certain observer obtrusive effects may have distorted the behaviors observed.
4. The final study is limited to those fifteen student teachers enrolled in the 1978-79 secondary music curriculum and instruction course at the University of Alberta.

Delimitations

The study is limited to teacher effectiveness as measured in academically engaged minutes rather than student achievement.

CHAPTER II

REVIEW OF LITERATURE

Overview

The following review of literature presents the research upon which this study is based. It is divided into three sections. The first section, in order to investigate the secondary purpose of direct instructional effects, explores the following topics: teacher effectiveness, direct instruction, training methods of pre-service teachers and teachers' thinking. The second section, in order to investigate the primary purpose of the training effects of microteaching, explores the following learning concepts: psychological principles applicable to the classroom, modelling and feedback, and the methodologies of sequencing instruction. Since instructional processes and learning concepts are highly dependent on teacher planning, the third section of the study addresses itself to planning theories. Each section concludes with a summary.

Instructional Processes

Introduction

Until the last decade, an analytical-experimental methodology had been the dominant paradigm in education research. Increasingly, this paradigm has been called into question as alternate research paradigms have emerged. Concern for the teacher's thought processes is a unique characteristic of many of the newer research models. Smith (1978b) states that "the dominant paradigm (experimental [analytical], quantitative, positivistic, and behavioral) has been too restrictive to cope with ideas, problems and interests of what is called education and of people who call themselves educators." (p. 366). He suggests that ethnographic methodologies which incorporate teachers' reflecting on their own classroom cognitive processes would result in superior research findings. He also recommends sophisticated analysis of dimensions of classroom climates (i.e., observational techniques which record actual classroom behavior as it takes place). This technique is referred to as the classroom observation investigation method in this study.

During the last thirty years, the views of Bloom (1956), Guilford (1971) and Taba (1964) regarding classroom processes have dominated educational literature. Even though their theories have differed they have all done important instructional research, as well as being advocates for systematic classroom observation. In addition, Dunkin and Biddle (1974) by relating process variables to achievement outcomes, have concluded the following characteristics of classroom research:

> 1. The categories of (instructional) behaviors suggested can be recognized in classroom processes with reasonable degrees of reliability, albeit with a few problems in their application.
>
> 2. The classroom studies have tended to emphasize lower level cognitive process....
>
> 3. Teachers can be taught to raise the level of cognitive operations in the classroom, although this conclusion has not been researched with respect to Guilford's categories. (p. 270)

The usefulness of systematic classroom observation depends on how the information is collected and the stance taken by the observer. Powdermaker (1966), who is quoted by Smith (1978b) alludes to the difficulties of any observation method:

> To understand a strange society, the anthropologist has immersed himself in it, learning, as far as possible, to think, see and feel, and sometimes act as a member of its culture and at the same time as a trained anthropologist of another culture. This is the heart of the participant observation method -- involvement and detachment. Its practise is both an art and a science. Involvement is necessary to understand the psychological realities of a culture, that is its meaning for the indigenous members. Detachment is necessary to construct the abstract reality: a network of social relations including the rules and how they function -- not necessarily real to the people studied. (p. 9)

The classroom observation method as advocated by Dunkin and Biddle (1974) and Stallings (1977) involves systematic observation of teaching in the classroom using instruments for measuring events and interaction behaviors. The reliability of this procedure is established by observing and measuring thousands of classrooms. They suggest that research in many types of classroom is needed before significant conclusions can be drawn. The present study uses a systematic observation technique in music classrooms as an instrument for recording events and interactions.

Research on Teacher Effectiveness

Teacher effectiveness research has resulted in a gradual evolution in researchers' conceptions of what constitutes effective teaching. Effectiveness was at one time perceived in relation to specific personality traits in the teacher and research sought to identify these. Later, teacher effectiveness was viewed in terms of the methods used by the teacher and research focussed on these. Still later, effectiveness was viewed as being dependent on teaching styles (e.g., indirect) as reflected in permanent teaching patterns. Most recently, mastery of a set of competencies has been used to characterize effective teaching and an emphasis has been placed on the teacher's ability to employ these.

Early research such as that of Barr and associates (1930) focussed on teacher personality traits and characteristics. Since objective instruments for measuring such did not exist, the analytical process consisted largely of examining descriptions of teachers made by pupils and/or other 'judges.' Scales or lists of these traits were then used to 'rate' teachers' instructional effectiveness. The weaknesses of this methodology stemmed from the fact that the characteristics listed were only those perceived to be effective; no empirical evidence was ever submitted to demonstrate that teachers who possessed these characteristics were in fact more effective than teachers who did not possess them. The most that these lists described was a teacher who looked effective, and the large amount of research in instructional effectiveness based on this type of methodology is therefore of questionable value.

Beginning in the 1950's, what is called the 'methods experiment' became the prominent research paradigm. Typical of this research were experiments in which two or more classes were taught by different methods. Analysis consisted of comparing the mean gains in knowledge of the classes so taught. The higher the mean gains, the more effective the instructional strategy was deemed to be. Were such an approach effective, pre-service teachers could become effective instructors by learning the best 'method.' However, the results of the methods experiment were often inconclusive and contradictory and its main weaknesses lay in the use of the pupil rather than the teacher (or the joint relationship) as the unit of analysis.

Because of the flaws inherent in the two methodologies, serious researchers began to focus on both teacher behavior and pupil learning.

This type of research, which was common after 1960 became known as 'process-product research,' and its methodology involved the random observation of teacher classroom behavior to identify those behaviors that are stable from one observation to the next and related to educational outcomes.

The development and dissemination by Flanders (1960) and others of 'interaction analysis,' as well as Gage's work (1963) have led to a proliferation of process-product research studies. Rosenthal and Jacobsen (1968) demonstrated that certain specific aspects of teaching style or behavior expectations result in higher pupil achievement. Rosenshine (1976) through a review of pertinent research delineated a number of effective teaching behaviors. These behaviors will be discussed later in this section.

The last area to be discussed is competency or performance based teacher education. This competency based model for teacher education implies that effective teachers have an extremely large repertoire of skills which contribute to effective teaching. Although process-product research identified stylistic teaching behaviors (e.g., clarity of expression), competency based instruction identified behaviors in specific situations (e.g., the ability to ask higher order questions). In the competency based model, effective instruction is identified by the command of a large repertoire of behaviors (i.e., skills, abilities, cognitive knowledge, etc.). Competency based research focusses on this repertoire, and the present methodology of such research usually includes systematic classroom observation, the identification of the teacher's intent or purpose, and measurement of pupil learning. The present study uses a similar competency methodology to identify specific pre-service teaching behaviors as measured using a systematic observation system called 'Quest' (see Appendix F), while the intents or purposes of the teacher are explored by the use of stimulated recall interviews. In the present study, however, measurement will be based on academically engaged minutes rather than pupil achievement scores.

The preceding brief historical discussion of teacher effectiveness research methodology demonstrates why research, although copious, has had such a minimal impact on teacher education. Many of the research findings have been contradictory, largely due to the methodology or theoretical base employed.

Process-product research does, at present, produce reliable data concerning effective teaching. When the observers of teacher behaviors are adequately trained to recognize specific behaviors, analyses of observation have generally yielded stable behavioral differences between effective and ineffective teachers.

In attempting to define effective teaching behaviors, Medley (1979) examined 289 studies and selected as valid only those that combined systematic observation systems with measurement of teacher effectiveness in terms of student gains over several months. He concluded that teachers who are observed and produce beneficial change in pupils deserve to be called effective and the longer the period of observation time the more likely the change was found to be permanent. He also concluded that in order to be useful, observation systems (and observers) must produce a record of what is observed on which to base their evaluation of the behavior.

Process-product research in the past focussed on teacher effectiveness, methods, strategies, and behaviors. Now the trend has been to identify specific parts, sequences, and behaviors in the teaching act as process variables (e.g., questioning, soliciting). More recently, with the researches of Medley, Flanders, Rosenshine and others, the historic research models encompassing general teaching methods (e.g., discovery method) and styles (e.g., authoritarian) have been replaced by student and teacher behavioral models. Thus, the most recent process-product research relies on sophisticated analysis of teacher and student behavior in the classroom (i.e., process and contextual variables) in order to correlate teaching behaviors with student achievement. The research of Nuthall and Snook (1973), Dunkin (1973) and Rosenshine (1976) give evidence that this type of classroom research is useful in determining teaching effectiveness.

As mentioned previously, in a major review by Rosenshine and Furst (1971), eleven 'promising' process variables were identified as effective. Table 1, following, lists these variables.

Direct Instruction

Direct instruction is the name given to the 'model' which emerged from Rosenshine's later (1976) studies in which he retained only four of his original eleven 'promising' variables. These four were found to produce consistent results: opportunity to learn, task orientation, direct questioning and criticism. The first three relate to positive achievement, while the last one frequently produced negative results.

Table 1

A SUMMARY OF ROSENSHINE'S INITIAL TEACHING VARIABLES

Rosenshine & Furst, 1971, 1973	Rosenshine, 1976
1. Clarity	Some +ve* but low correlations; may not be an important variable at the elementary level.
2. Variability	-ve* (however, may be important in some contexts).
3. Enthusiasm	contradictory: an "ineffective" variable.
4. Task Oriented	+ve, but non-significant; only used in one study (since 1973).
5. Student Opportunity to Learn Criterion (content covered)	significant (+ve) variable.
6. Teacher Indirectness (use of Student Ideas)	positive trend.
7. Criticism	negative trend.
8. Use of Structuring Comments	used only in 1 study (non-significant).
9. Types of Questions	consistently +ve for factual questions, mixed for higher level questions.
10. Probing	no correlation.
11. Level of Difficulty of Instruction.	inconsistent.

*(+ve) = positive; (-ve) = negative

Based on Rosenshine's (1976) findings, the direct teaching model has the following characteristics:

> Time is structured by the teacher and a large portion of the time is spent on academic skills. There is a predominance of seatwork in academic related tasks. Materials are sequenced into small steps.
>
> Questions are narrow, direct, usually with a single answer, and structured to obtain a high percentage of correct answers.
>
> Teachers or materials provide immediate feedback using praise and acknowledgement of student answers.... Correct answers are followed by another question and incorrect answers are followed by the teacher giving the answer.
>
> Students work in small or large groups supervised by the teacher for instruction or for seatwork. There is little free time or independent unsupervised activity.
>
> There is less off-task student behavior. This may occur because of the systematic, structured, supervised setting and management system. (p. 12-13)

The main components of Rosenshine's (1979) instructional model are: (1) The teacher is the prominent feature since he sets the goals, structures the behaviors, and communicates these expectations to the students. (2) The time available for instruction is increased because students who have been told the direction in which they are going, how long they have to complete a given task, and the expected results will work more efficiently, thus leaving the amount of material covered in the hands of the teacher. (3) The pacing is continuous, the coverage of the content is extensive, and the performance of the students is monitored. (4) The teacher chooses instructional materials suited to the pupils' level, and (5) formulates questions at a low-cognitive level so that students can produce many correct answers. (6) The interaction between teacher and pupil is structured but not authoritarian. (7) Feedback is given immediately to the students and is academically oriented. (8) The goal is to move the students through a sequenced set of materials or tasks.

Several studies have supported the general effectiveness of direct instruction while at the same time exploring some of Rosenshine's variables.

In the Texas effectiveness studies by Anderson and Brophy (1976) a set of guidelines was developed consisting of twenty-two behaviors for teacher management of elementary reading group instruction. Sixteen of these behaviors were related to the organization and management of the whole group while the remaining six behaviors were concerned with teachers' responses to individual student answers. An experimental group was instructed in these behaviors while a control group was not and the mean scores of each group on each of the behaviors were compared and signficant differences attributed to the treatment. The researchers concluded that the treatment improved treatment teachers' behaviors, but the results also demonstrated that not all components of the treatment were equally successful.

The Texas team (Anderson, Brophy and Evertson, 1977) replicated the above study using junior high school students and attempted "to identify classroom processes and teacher characteristics which are situation specific." (p. 2). This time, the researchers looked for behaviors which were: (1) varied across sections of the same subject matter, (2) varied across subject matter, and (3) appeared to be affected by individual student variations across two different classes and teachers. The research team concluded that: (1) direct teaching behaviors are more successful for large group instruction than for small group instruction; (2) a sustaining or probing effect for questioning produced greater results, even though there was little difference in the amount of interaction that took place; (3) junior high school mathematics teachers were more 'business-like' and more authoritarian than were English teachers since the latter tended to show more tolerance of student opinion, use more praise, and ask more opinion questions than the mathematics teachers; and (4) the student behaviors were stable across the two subjects.

Conclusions from the Texas effectiveness studies (Anderson, Brophy and Evertson, 1978) for elementary classes included behaviors which were effective in low socio-economic status (S.E.S.) classes, but less so in high S.E.S. classes. They found 'direct' teaching behaviors (e.g., efficient classroom management skills, emphasis on task, seatwork, etc.) to be effective in producing gains, especially in early elementary and low S.E.S. classrooms.

In comparing the above results with the results of the early Texas study in elementary classrooms, Anderson, Brophy, Evertson (1977) conclude: (1) indirect teaching behaviors are more effective at junior high school level; (2) instead of age level or grade level determining the teaching behavior variables at the junior high school level, the teaching behaviors are dependent upon only the subject matter; and (3) since student behaviors for the most part remained stable across subjects, it would appear that student characteristics do not determine teaching behaviors in these classrooms.

Another study which supports similar findings on subject matter effects was conducted in England. Eggleston _et al_. (1976) found that there was a dominant teaching style (i.e., direct teaching behavior) among teachers in secondary school biology, chemistry and physics. Anderson, Brophy and Evertson (1977) indicate the need for replication of this type of study.

> It is possible that subject matter determines teaching style, or that the individual's personality determines his college major, what subject he will teach, or perhaps, the situation is explained by some interactions of the two explanations (p. 8)

From the above studies, it can be concluded that subject matter determines teaching behaviors in secondary school classes. The following studies deal with the types of direct instructional behaviors involved in teaching music classes (i.e., generic [stylistic behaviors] or specific [subject related]).

Few studies deal with music and generic teaching behaviors. Moore and Kuhn (1975) in a series of six studies examined the effects of different training techniques on different pre-service music education classes. Subjects for the study were elementary music education students enrolled in either a course of Basic Musicianship or one in Basic Musicianship and Music Teaching Skills. The students in the latter course rated higher in teaching effectiveness than those in the former. In a later study, Moore (1976) found that student teachers who received feedback through videotape and forms on the skill of reinforcement during microteaching rated higher on their final teaching performance than the control group which received no feedback. Moore (1976), Yarborough and Madsen (1976), Thomas (1970), and Erbes (1978) state the need to define further the integral behaviors needed in the teaching of music.

The present researcher will consider both generic and specific music behaviors in her study. The rationale for this is based on the findings cited above, as well as the researcher's own ideas and experience. Direct instruction, interaction, and teaching style behaviors (see criterion behaviors, p. 9) constitute the components of the researcher's model for teaching. Since direct instruction behaviors are based on the ability to plan adequately, teacher planning will also be investigated.

Training Methods for Pre-Service Teachers

This section presents the rationale for using microteaching, feedback and modelling for training students in education. In this context, the Manhattanville Model (see p. 11) was used in the pilot study, and the Instrumental Instructional Behaviors (see p. 10) in the final study.

Drew (1974) found the following reasons for preferring the Manhattanville Music Curriculum Project (MMCP) over traditional training approaches as a training procedure for pre-service teachers. Greater understanding about music was elicited from MMCP trained teachers and they were also more tolerant of different kinds of music. The pre-service teachers' techniques for performing were better and their attitudes towards the music program were generally more favorable. Although Drew's study supports the use of MMCP for training teachers, the components for teaching the MMCP model need further investigation. Therefore, in the present researcher's pilot study the effects of Manhattanville were limited to teaching behaviors which were investigated in training pre-service music teachers.

The usefulness of microteaching for training music undergraduates in skills has been substantiated in the following studies. Brand (1977) investigated the effectiveness of video-viewing techniques in teaching behavior management skills to undergraduates by comparing them with the effects of traditional lecture-discussion methods. The experiment involved fifty-two music education majors at the University of Miami assigned to an experimental and control group. Over a five week period the experimental group viewed videotaped behavior problems and individually answered a series of questions about them, whereas the control group participated in lectures, discussions and school observation experiences. Both the experimental and control groups then taught twenty minute mini-lessons to peers who identified behavior skills. The results indicated that the video-viewing techniques did not produce statistically different outcomes from those produced by traditional lecture-discussion methods. However, when placed in an actual classroom situation, the experimental group's management skills proved superior.

In a study by Moore (1976), microteaching student teachers who received video feedback and forms for the skill of reinforcement rated higher on their final teaching performance than the control group which received no feedback. These studies indicate that microteaching is effective for training music undergraduates in teaching skills, that feedback aids in the acquisition of these skills, and that video-viewing is an effective procedure for illustrating skills. The present study devised both an appropriate set of teaching behaviors and a satisfactory training method utilizing modelling and feedback techniques.

The set of teaching behaviors (i.e., strategies) were derived from a combination of the researcher's experiences and observations and also the research findings of Reimer (1970), Yarborough and Madsen (1976), Moore (1976), Thomas (1970) and Erbes (1978). In addition to music behaviors investigated in the pilot study, the final study also investigated direct instructional behaviors, interaction and teaching style behaviors (see Instrumental Instruction Behaviors, Appendix E).

The underlying principles of the Instrumental Instructional Behaviors are found in the 'study' section of suggestions made by Reimer (1970) for a performance technique which is called experience-study-re-experience. Interaction behaviors recommended for instrumental classes are found in the research of Erbes (1978). He found in two studies involving twenty-four public school instrumental music teachers that 87.7% of the verbal behaviors (e.g., lecturing, informing, and giving directions) were conductor initiated. Only 4.1% were student initiated and most of these were short teacher-controlled responses to teacher questions. Erbes concluded that general music teachers rated highly by their superiors tend to be more supportive and flexible in their use of teaching techniques. He also indicated that music teachers using praise, enthusiasm, clarity and encouragement have higher student achievements. Both Reimer and Erbes' suggestions for instruction and class interactions were included and formulated into behaviors (i.e., strategies) for the present study.

Although not addressed in the present study, an important question to be answered concerns whether a teaching skill acquired during training will persist. A study of in-service teacher training procedures was conducted by Borg (1972) at the Far West Educational Laboratory in San Francisco using a mini-course consisting of three parts: (1) films describing and illustrating nine skills to be acquired and three to be extinguished, (2) twenty minutes of microteaching followed by reteaching, and (3) videotape replay and self evaluation. To appraise the efficacy of the procedures used in the above minicourse for modifying the behaviors of certificated teachers, Borg made three videotapes of each of forty-eight teachers, the first being made during the beginning of the course, the second shortly after training, and the third four months after the course was completed. The twenty-four teachers who remained in their original schools three years after the course ended were taped a fourth time. These tapes were then analyzed for the frequency with which the skills were evidenced in each participant. The results indicated that three of the interactive skills - refocussing, frequency of punitive teacher responses to incorrect answers, and pausing - were not influenced by the training procedures. Redirection and clarification were sustained over the three year period, while prompting was not. Such studies clearly point to a strong positive relationship between this microteaching technique and the reduction of undesirable teaching behaviors, as well as aiding in producing desirable behaviors. Microteaching performance, in fact, not only appears to be the best predictor of performance in the classroom (Brown, 1975), but is beneficial in changing teaching behaviors over an extended time period.

Teachers' Thinking

The cognitive processes which determine teacher behavior are not clearly understood yet. Lanier and Floden (1977) envisage a time when understanding of teacher information processing will be achieved and will be found to be a determining variable of teacher effectiveness.

There is however, a danger expressed by some researchers in applying the cognitive information approach to teaching. Fenstermacher (1978) suggests that this danger arises from the assumption that knowing what accounts for effective teaching constitutes knowledge of how to produce effective teaching. He believes these to be separate and only in-directly related matters. If Fenstermacher is correct, caution must be exercised against viewing significant behavioral correlations as a structure for inferring causal relationships (outcomes).

> As is well known, a causal inference cannot be made directly from a significant correlation between two variables. The complementary principle is, however, frequently ignored when a significant correlation is found; a causal relation exists somewhere -- perhaps between the two variables or between the two variables and a third, or any number of possibilities. (McDonald, 1976; p. 50)

As Fenstermacher (1978) suggests, not only are the teaching process variables (i.e., behaviors) responsible for higher student achievement, it may be that an intervening principle (i.e., teachers' thinking) is responsible for the correlation between the two. Other researchers including Morine (1975) allude to the importance of teachers' thinking. Since this research and that of others supports the notion that the teaching act is not solely a scientific paradigm, the present researcher stresses that teachers' thinking is such an important variable in the teaching act that it should be a noteworthy consideration in teacher education. It is indeed an error for the researcher of teacher effectiveness to infer from a correlation between process-product variables that one becomes an effective teacher by following rules and percepts derived from that relationship, i.e., direct theory. A close investigation of intervening paradigms (i.e., teacher's thinking) is also needed.

In order to understand the teacher's thinking process, it is important to understand all the following related components:

> 1) his goals, 2) the major characteristics of the task environment, and 3) the transformation of that task environment into a cognitive problem space which reflects the limitation of his invariant information processing capabilities. (Cooper, 1979; p. 6)

The following cases illustrate these components. The first year music teachers with similar training, socio-economic background, pre-service training, and command of the behaviors required for effective teaching are assigned to teach in different local junior high schools. The two schools have similar administration systems and students with similar S.E.S. backgrounds. The music teachers in the two schools at the end of a university training program demonstrated effective teaching competencies (e.g., classroom management, interactions, activities and musicianship). However, the beginning Grade VII class of one responds with growth in musicianship and performing ability, while that of the other is 'putting in time.' Why the difference? Teacher expectations, environmental conditions and teacher decision-making actions may be the reasons. In his extensive collation of recent teacher effectiveness research, Medley (1977a) concluded: "somehow...we must find and use a model in which the teacher's intent or purpose and the behavior of the individual teacher both play a part in the teaching process." (p. 43). The above example and Medley's conclusions suggest the importance of exploring the following areas: (1) the behaviors necessary to teach a given subject, (2) the conditions under which the use of these behaviors is likely to occur, (3) the various training situations useful for practise of the behaviors, and (4) the effects of the teacher's thought processes.

Shavelson (1976) has described teaching as a "process by which teachers consciously make rational decisions with the intent of optimizing student outcomes." (p. 144). In his opinion, a teacher's ability to choose a strategy effective for eliciting a desired student outcome will decide the teacher's effectiveness. While a number of methodologies are readily available for aiding teachers in decision-making e.g., computerized learning programs, microteaching, mini-courses, and protocol kits, the evidence about their usefulness is contradictory. To study teachers' thoughts regarding decisions, it has been found that questionnaires and interviews are ineffective for this purpose. However, studies such as those by Clark et al. (1978), Marland (1977), Cooper (1979) and King (1979) report the benefits of using stimulated recall interviews for revealing teachers' thoughts.

Stimulated recall is an introspective methodology which employs audio or visual techniques, or both, and records the subject's behavior to help him recall the mental activities which accompanied his behavior. Cooper (1979) conducted stimulated recall with four teachers and twelve pupils in Grades IV, V and VI. The majority of the thought units recalled by the teachers in her study revealed a strong focus on future instructional tactics which suggests that planning is of major importance in teachers' thought processes and that effective teacher planning decisions include suitable teacher-pupil interaction during instruction.

Morine (1976) supported the above when she discovered that only 4% of the thought processes of effective teachers are unplanned. Stimulated recall was used in this study to identify the types of planning decisions made by Grade II and V teachers. Three types of instructional planning procedures important to the present study were observed: interchanges (decisions related to instantaneous verbal interaction), planned activities, and unplanned activities (those activities not previously planned as part of the original activities).

Taylor (1970) demonstrated the importance of including the content to be taught and related contextual factors (i.e., time, sequencing, and resources) in the planning of the secondary curriculum. Anderson, Brophy and Evertson (1977) support this view. Morine, who also cites evidence for the importance of planned instructional activities and the use of teaching routines, found that three stages exist in the planning process: the dilemma creating the need to plan (i.e., problem finding), the formulation of a planning process (i.e., goal setting), and the implementing process. Berliner's (1976) studies suggest the need for further study in each of these processes. Generally, it is agreed that planning and implementation are of paramount importance in both the pre-service and in-service teaching experience.

There is little evidence available to suggest how music education pre-service teachers process cognitive information about classroom planning. Often specific technical problems in instrumental literature are the only guides for teacher planning. Even though Yarborough and Madsen (1976) identified the components of an ensemble rehearsal as warm-ups, musical concepts, activities for performance, and listening these areas are not necessarily systematically planned. To date, how the student teacher uses the above components in the planning of a rehearsal is still uninvestigated. The present study will explore this.

Section Summary

The first section of the Review of Literature, Instructional Processes, investigated research on teacher effectiveness, direct instruction and training methods for pre-service teachers, and teachers' thinking.

In the rationale, preference was expressed for systematic observation in classrooms as advocated by Dunkin and Biddle (1974) over traditional research modes which were too restricting. Such systematic observation is accomplished through the use of instruments developed for reporting the events in the classroom observed.

An historical summary of teacher effectiveness research began with the research done by Barr and associates (1930) which focussed on the consequences of certain teacher personality traits. Later in the 1950's, research centered on the methods experiment (e.g., authoritarian, direct, and indirect), where two or more methods were compared. The research of Rosenthal and Jacobsen (1968) demonstrated that teacher effectiveness was dependent upon teacher expectations. Later, studies by Rosenshine and Furst (1971) interpreted effectiveness as the mastery of competencies which relate teacher behavior to student achievement. More recently, Anderson, Brophy and Evertson (1977) emphasized the ability to employ these competencies during professional decision making.

An important instructional model to emerge from teacher effectiveness research was 'direct instruction.' A prototype of this model was developed by Rosenshine and Furst (1971) which included only direct instructional behaviors for accomplishing specified goals. As the model developed, it came to include such teacher centered activities as goal setting, time allotment for instruction, monitoring of students' progress, and questioning and feedback. Studies done by Anderson, Brophy and Evertson (1977) used this more highly developed model and related it to pupil achievement.

The research involving direct instruction has led to studies on teaching behaviors needed for certain subject areas. Two such studies were one by Eggleston _et al_. (1976) which explored subject and general behaviors in secondary science and one by Moore and Kuhn (1975) which alluded to the importance of utilizing general teaching behaviors in music.

Procedures appropriate for training undergraduate students in teaching behaviors were explored by Borg (1970, 1972) whose studies supported the use of microteaching. Microteaching has two main components, modelling and feedback. The use of modelling alone was studied by Bandura (1963, 1965, 1974) and its value for preventing one-trial extinctions was substantiated. Feedback in the present study is confined to the information a student teacher receives about how well he responds to the modelled behaviors and includes verbal or written comments from his supervisor. Evidence was given to support the effectiveness of each type of feedback.

The effects of the microteaching process were also discussed. Microteaching provides classes of four to eight pre-service teachers with a procedure for practise teaching in a variety of behaviors in which the normal complexities of the classroom are reduced and feedback is provided on each teacher's performance. Evidence of immediate success for microteaching in music was given by Brand (1977) and Moore and Kuhn (1975) while Borg (1972) demonstrated its lasting effects.

There is evidence suggesting that teacher's decision-making skills are an important variable in teacher effectiveness. The importance of planning decisions by teachers is stated by Zahorik (1975), Yinger (1978), and Morine (1976). Morine found that over 96% of teachers' thoughts are concerned with planning. Other researchers such as Marland (1977), Cooper (1979), King (1979), and MacKay (1978) have found in teacher stimulated recall interviews that teachers' thoughts are indeed concerned primarily with planning. Therefore, the present study will investigate pre-service teachers' thoughts about planning by utilizing the stimulated recall technique.

Learning Concepts

While the preceding section dealt with the instructional behaviors considered important for teaching, the present section will investigate the learning concepts on which these behaviors are based, and will discuss those applicable to the classroom, modelling, feedback, the assimilation-to-schema concept, and sequencing instruction.

Psychological Principles Applicable to the Classroom

Much has been learned about the learning processes needed to become competent in classroom teaching. Conners (1978) identified fifty psychological propositions relevant to classroom learning (c.f., teaching) in the research of Wheeler (1967), Seagoe (1970), Griffith (1973), Hilgard and Bower (1975), Nicholls and Nicholls (1975) and Bigge (1976). Of the fifty propositions discovered, he identified twenty as being particularly important and urged that teachers implement these in their teaching.

Conners' twenty learning propositions can be applied to both the preactive and the interactive phases of teaching (Jackson 1968). The term 'preactive' denotes brief or detailed planning prior to instruction, while 'interactive' refers to the interaction between pupil and teacher during instructional activities in the classroom. Conners (1978), from his review of the research cited, suggests that several of the learning propositions are relevant for developing teacher behaviors. Watson (1960), Wheeler (1967), Griffith (1973), and Hilgard and Bower (1975) identified propositions for learning, while Seagoe (1970), Nicholls and Nicholls (1975) and Bigge (1976) applied these propositions to classroom practise. The present study investigates preactive (behavior numbers 1-18), and interactive instructional behaviors (numbers 27-31) using Conners' suggested twenty propositions.

Watson (1960) lists the following as propositions important for influencing learning: active involvement of the learner, frequency of repetition, reinforcement, generalization and discrimination, drive conditions, conflicts and frustration arising from learning, learning with understanding, cognitive feedback, goal setting by the learner, divergent and convergent thinking, individual differences, developmental stage and influences, culturally related learning, individual motivation, self esteem, and group atmosphere of learning. Rosenshine and Furst (1971) support Watson's learning propositions as being important for instruction in the classroom.

Wheeler (1967) identified a large number of inter-related psychological propositions and among these were twelve which are similar to those of Watson (1960). He states that, in the circumstances under which he teaches, different contexts prevent the teacher from relying solely on the work of animal psychologists or learning theorists and he advocates the inclusion in teachers' instructional methods of insights from social psychology, anthropology, and sociology. In summary, Wheeler (1967) maintains that although much is known about how learning proceeds, there has been little attempt to translate such psychological propositions into terms suitable for the practising teacher.

Griffith went further and identified sixteen important psychological propositions from social psychology and sociology. He suggests that teachers who understand these sixteen, plus another nineteen learning propositions, will be better able to devise a teaching model appropriate to the changing situations in which they find themselves. Hilgard and Bower (1976) advocate what they call a "band-aid" approach in which psychological propositions are used to solve situational problems as they arise in the classroom. Even though this view is not generally supported by learning theorists, Hilgard and Bower (1975) and Seagoe (1970) claim that working principles of operation are needed to narrow the gap between learning theory and instructional practice. Seagoe (1970), Nicholls and Nicholls (1975) and Bigge (1976) applied their learning propositions to classroom teaching.

Despite the agreement in needing to link theory with practise, two main criticisms remain with the theorists and practitioners:

> The teaching of educational psychology is an issue raised by critics who have pointed out that there is little agreement on subject matter to be taught, that students are exposed to too much subject matter, and theory has not adequately been linked to practise. The second area...is the critical acceptance of present learning theory for classroom settings.... The critics indicate that there is a need to modify principles of learning to account for the complexities of human learning and at the same time, there is the need to carry out research in the classrooms to investigate human learning in social settings. (Conners, 1978; p. 57)

Other propositions must be investigated to aid in bridging the gap between learning theory and classroom practises.

One prevalent method which seeks to bridge the gap between learning theory and instructional practice is microteaching.

Microteaching incorporates the principles of modelling and feedback (i.e., learning theory) and also utilizes classroom teaching episodes. It is in this context that the present study will investigate the effects of microteaching.

Modelling and Feedback

Modelling theory as expounded by Bandura and Walters (1963) and Bandura (1974) regards learning by observation as a process of transforming a modelled event into imaginal and memory codes (i.e., when environmental cues similar to those modelled are later experienced by an observer, performance of the observed behavior may be elicited). Acquisition and utilization of a modelled behavior by the observer are influenced by a number of variables including outcomes rewarding to the observer, identification with the model, attention to relevant social cues, and retention of the observed event.

Modelling is now regarded as an extremely important factor in learning.

Rutherford (1973) studied the effects of positive reinforcement by teachers who were trained with one of the following: (1) a combined model and feedback intervention, (2) a model tape intervention, (3) a feedback tape intervention, and (4) a control condition. He found the combined model and feedback intervention to be effective in changing teachers' behaviors, while feedback tape intervention was ineffective. He attributed the success of the former to the eliciting effect of model viewing. In view of the absence of an observed event with the "feedback only" condition, his findings suggest that it is modelling which results in positive teacher responses in the combined model and feedback condition. Alper _et_ _al_. (1972) demonstrated the need to follow modelling with continuing feedback and systematic reinforcement when the skill to be acquired is needed continuously and is complex.

There is ample evidence to suggest that viewing a positive model has a desirable effect on the acquisition of a teaching skill (McDonald and Allen, 1967; Koran, 1968; Langer, 1969 and Alper et al, 1972). Young (1970) studied the effectiveness of various types and combinations of models on lecturing skills. His results indicate that the most effective modelling approach is a videotaped teaching episode featuring a specific element followed by similar classroom illustrations. The present research project utilizes both a modelled demonstration and a teaching video teaching episode of teaching skills which are believed to aid students' learning.

The manner in which models are presented is also very important. Active student participation while model viewing is advocated by Popham (1974) and Borg et al. (1970) who demonstrated the usefulness of students identifying and discriminating teaching skills while viewing a model. Further evidence indicates the value of having student teachers practise a skill in a teaching context similar to that of the model in which it was originally observed (Berliner, 1969).

Krasner and Allman (1965) suggest the use of modelling in sequential progression. They found that modelling accelerates the learning process and reinforces it by preventing one-trial extinction in situations which may produce adverse consequences. Bandura (1974) states that:

> Exposure to modelling influences has three clearly different effects.... First, an observer may acquire new response patterns that did not previously exist in his behavior repertoire.... Second, observation of modelled actions and their consequences to the performer may strengthen or weaken inhibitory responses of observers.... Third, the behavior of others often serves merely as discriminative stimuli for the observer in facilitating the occurrence of previously learned responses in the same general class. (p. 859)

In addition, Bandura (1963) emphasizes that an observer will fail to acquire matching behavior if he does not attend to, recognize, or distinguish the distinctive features of the model. The learner first needs exposure to a model of the skill's essential features followed by a study of the principles of its use if his behavior is to be shaped after the model.

It is generally accepted that feedback is desirable in the process of teacher training (e.g., the last phase of microteaching described by Borg et al. [1970]). In a study by Main (1972), trainees receiving feedback performed significantly better on the specific teaching skill of probing than students who did not. There is, however, considerable disagreement regarding the method of dispensing feedback. Results from the researcher's pilot study found that supervisor feedback was valued more highly by student teachers than peer feedback either by itself or in combination with that of a supervisor. McDonald and Allen (1967) in the skill of positive reinforcement during questioning compared simple self feedback with videotapes to supervisor reinforcement with cue discrimination. When the supervisor reinforced the desired behavior as it occurred and pointed out places it could have been used, the trainees' performance improved significantly more than with any other mode of feedback. This provides further evidence that supervisor feedback is especially effective for training in teaching skills. Oliver (1967) reported a study with vocational teachers in which some received feedback either from students alone or from students and a supervisor, while others received no feedback at all. Combined feedback did not produce any greater change than student feedback alone. This would seem to indicate that student feedback can also be effective in improving teaching performance. Yarborough et al. (1978) also found student teachers could improve their own conducting techniques by the use of self-evaluation forms. It therefore can be concluded that forms, peers and supervisor feedback can all be effective modes of improving teaching skills performance.

Disagreement about the method of dispensing feedback is essentially a controversy about the effectiveness of aided versus unaided feedback (i.e., supervisor versus no supervisor). Although other types of aided and unaided feedback have received attention for a long time, it is only since 1964 that videotape feedback has been used. It is generally agreed that unaided feedback is desirable in training in-service teachers and aided feedback with pre-service teachers. Davis and Smoot (1969) have shown the value of aided feedback and numerous other researchers including Doty (1970), and McAleese and Unwin (1971) have drawn attention to the desirability of aided feedback provided by a supervisor only. Despite disagreements as to the methods of dispensing feedback modes on the skill to be learned, research does show feedback to have a positive effect on the teaching performance.

The effectiveness of supervisors administering feedback is well established by research. (McAleese and Unwin, 1971; Griffith, 1973). Brown (1975) demonstrated that student teachers at Ulster and Stirling Universities were firmly convinced on the value of supervisor feedback. Johnson and Knaupp (1970) found that student teachers wanted qualified supervisors, as well as opportunities for self-guided professional development. Johnson and Knaupp used a factor analysis of student teachers' responses to Likert-scale attitude instruments to indicate that the student teachers also like to share their experiences with their peers and to have their strengths appreciated and their faults overlooked. Maier (1958) recommends the 'Listen and Tell' technique for feedback. This procedure, which combines positive reinforcement and feedback, allows students to develop their own analytical skills and to suggest their own approaches, while also allowing a supervisor to prompt and make suggestions.

The amount of feedback to be given still needs further investigation. Dunkin *et al*. (1973) discovered that learning improves with the amount of positive feedback given. Both video and audio feedback can help the student teacher analyze his teaching episode and help him determine his behavioral success. McDonald and Allen (1967) investigated the specific skill of positive reinforcement, compared modes to feedback ranging from simple viewing of videotapes of oneself to reinforcement by supervisors who discriminate behaviors. It was found that when the supervisor was used, the frequency of positive reinforcement increased. Therefore, evidence suggests that the greater the amount and variety of feedback, the greater the improvement in teaching performance.

Brown (1975) found that the supervisor can accomplish much greater improvement in trainee performance than any other feedback because he is viewed as a facilitator of concept learning. The supervisor helps the student refine objectives by using one or more of the following: forms, explanations, peer feedback or video observations. After he has been given guidance in processing feedback information, the student teacher then can reconstruct his own performance of the teaching behavior.

Research evidence and testimonials from the behavioral sciences can be very helpful in providing notions concerning motivation and behavior changes (Fuller and Manning, 1973). Fuller and Manning (1973) explain that the "feedback receiver, or person confronting himself, by the use of forms in this case, identified discrepancies as a dissonance and creates tensions, thereby activating a motivating force leading to its own reduction, i.e., change in self-perception of behavior." (p. 470). If the feedback is accompanied by peer or supervisor intervention, behavior change is more likely to occur. A study by Birch (1969) demonstrates that guided self-analysis forms using coded categories of teaching behaviors produce significantly greater changes in teacher behavior than self-confrontation on videotape. Such forms facilitate additional feedback from supervisors or peers and can be used as a basis for critique-session discussions.

In summary, the power of a good model has been substantiated and modelling is regarded as an important element in learning. Modelling was described by Borg et al. (1970) as one of the basic components of microteaching which included: (1) observing a modelled event, and (2) shaping one's behaviors after those of the model. In addition, microteaching also includes receiving feedback on one's performance. Mayer (1977) has demonstrated that modelling is best viewed in a hierarchial progression from general to specific.

Feedback is involved in the last phase of modelling and much evidence is available suggesting its importance. While some feedback modes are debatable, supervisor reinforcement is highly recommended. The present study investigates the effects of both modelling and feedback on the acquisition of specific teaching behaviors.

The Assimilation-to Schema Concept and Sequencing Instruction

The concept of assimilation-to-schema holds much relevance for educators. Its origins lie in the psychological study of human learning and memory. Although modelling and feedback (dealt with in the last section) aid in human learning, it is only by applying an understanding of the assimilation-to-schema concept that one can transfer theory to practise.

To describe the assimilation-to-scheme concept requires that the processes and products of learning be differentiated. Mayer (1977) describes these in the following manner:

> The processes of learning are the acquisition of new material in the learner by connecting it with (or assimilating it to) some aspects of existing cognitive structure (or schema). The products of learning are described as the newly reorganized cognitive structure which integrates old and new knowledge and which in turn, may serve as an assimilative scheme for subsequent learning. (p. 369)

Because of the importance of the sequencing of instruction, the processes of learning will be dealt with in this section.

The theories of Ausubel's (1968) extension of the assimilation-to-schema (A-S) concept, and Mayer's differentiation (as described above), are particularly helpful in theorizing about instructional considerations. Ausubel's main theories are as follows:

1. Schemata are cognitive rather than emotional or attitudinal.
2. The interactive-construct nature of the learning process is emphasized rather than the process of remembering.
3. Two distinct types of learning process are involved in assimilation; meaningful learning set which refers to the assimilation of new information to a meaningful structure of existing experience and rote learning set which refers to a much narrower set. (p. 370)

Subsequently, Ausubel observed that the assimilation-to-schema theory takes account of three conditions: "1) the reception of (in the mind of a responsive learner) the to-be-learned material, 2) the availability (in the learner's mind) of a cognitive structure to which the new material may be assimilated, and 3) the activation of the structure during learning." (p. 369). In short, rote learning requires only that the subject's mind arrive at a receptive mental state (condition 1) before a new condition is learned, whereas all three of Ausubel's conditions are needed for meaningful learning. Gruno and Mayer (1972) and Mayer (1975) distinguish between strong and weak meaningful learning sets. Strong sets can adapt flexibly to what is to be learned from new experiences and ideas, whereas weak sets can only add new ideas, however incongruously to their original structures. How a strong or weak learning set can affect the planning of instruction is discussed below.

In order to resolve contradictions in the findings of research in this area, Mayer (1977) has outlined particular learning goals and better learning methodologies. His main findings support increased retention in verbal learning and better transfer in general-to-specific sequencing. To support his A-S theory, Mayer recommends that subjects be given a good general background in an area in order to be well prepared to assimilate new specifics and to deal with future unfamiliar experiences. Subjects who are given specific-to-general learnings, or who have received no background preparation whatsoever will lack skills in assimilating new material and be unable to deal with future unfamiliar experiences. An example of this general-to-specific paradigm is the "experience-study-re-experience" procedure of Reimer (1970) in which a piece of music is played, highlights are identified and studied and finally, the piece is replayed with enhanced awareness.

Yarborough, Wapnick and Kelly (1978) demonstrated the effects of a strong meaningful set in a pre-post test experiment involving music majors. They used two types of feedback in training undergraduates in conducting techniques. One group received video feedback and comments from an experienced conductor who also modelled the correct techniques. The other group received video feedback and used Yarborough and Madsen's (1976) observation forms and checklists. There were no significant differences when pre- and post-tests were compared. However, after receiving conductor feedback the first group, although no better in conducting than the second group, improved in score preparation, eye contact, and conducting mannerisms (meaningful learning), all of which Erbes (1978) identified as important. This finding demonstrates that rote learning (e.g., conducting) can be easily learned, but adequate meaningful learning requires an additional intervention method (e.g., conductor feedback). Additional support is given by other music researchers who support Mayer's (1977) A-S theory by advocating both verbal and meaningful learning as being important in music education. (Yarborough, 1974, Madsen et al., 1975; Moore, 1974; Reimer, 1978; and Moore and Kuhn, 1975).

Sequencing is important in both the modelling phase and other instructional phases of learning. Mayer (1977) comments on the importance of the position of modelling in the sequencing of learning. Properly placed in a sequence, a model serves to increase learning results, not only in retention of a new behavior, but also in a broader, more integrated learning. The success with which this occurs is influenced by both the sequencing of the modelled event and the controlling of the conditions under which it is presented. The present study utilizes this modelling notions of sequencing and situation control.

(See Chapter III).

Questions about the instructional ordering of content, as opposed to traditional random methods of presentation have been raised by Gagné (1969) and White (1973) who hypothesize that content should be organized in a hierarchial progression. Gagné (1969) states:

> Instruction would be most effective when it begins at the most basic capacity that the learner does not yet have and builds progressively upwards in a hierarchy.... It is possible...to begin with a clear statement of some terminal objective of instruction, and to analyze this final capacity into subordinate skills in order that lower-level skills can be predicted to generate positive transfer to higher-order ones. (p. 1)

This view underlies the theory presented below for teacher education.

Learning is enhanced when goals are planned and activities are sequenced. Morine (1975b) supports the planning of instructional content and advocates the incorporation of adequate teaching skills for its implementation. The planning components include the integrated means-end goals, classroom interaction and pupil feedback. She gives first priority to decisions involving content goals and classroom interactions. The way teachers use these content goals and interactive skills in planning helps determine their differences in decision-making.

The type of planning indicated above is supported by learning researchers. Mayer (1977) states that subjects learn by attempting to relate new material to some already developing cognitive structure resulting in the formation of new concepts.

In conclusion, the assimilation-to-schema concept is useful for educators in aiding them in sequencing content and in their modelling of instructional procedures. The necessary conditions for meaningful learning set are "1) the reception of the to-be learned material, 2) the availability of a cognitive structure to which new material may be assimilated, and 3) the activation of the structure during learning." (Ausubel, 1968; p. 369). Research indicates the particular importance of an assimilative set (condition 2) and an active learning structure (condition 3) if meaningful learning is to occur; and Morine (1976) found learning to be more likely when goals, activities and interactive instruction are effectively organized during preactive planning.

Consistent with the findings of the above research (i.e. psychological principles applicable to the classroom, modelling and feedback and the assimilation-to-schema concept), the present study utilizes these concepts in formulating the treatment procedure. The section summary following will include a summary of these learning concepts.

Planning Theories

Planning is one of the teacher's most important jobs. Kounin (1970), Gump (1969) and Doyle (1977) emphasize this fact and demonstrate that the complexity and unpredictability of the classroom itself must be taken into account in effective planning.

Planning in the past has made extensive use of a means-and-end model in which previously determined objectives provide guides for the devising of activities and strategies. Zahorik (1975) in a study of teachers of adults, secondary school teachers, and elementary school teachers found that although 56% use objectives in planning, only 28% of these reported objectives as their first planning decision. The planning decision made first by the majority of the teachers studied concerned lesson content (c.f., instructional activities).

Most recently an 'integrated means-and-end' model has been devised in which the planning of objectives is done not only in terms of subject content structure, but also of student preference in learning experiences (Zahorik, 1975; McDonald, 1976). This method of planning evolved with the following studies on how teachers spend their planning time. Peterson, Marx and Clark (1977) examined classroom planning by studying teachers 'think aloud' comments and found that: (1) teachers spend most of their planning time structuring content, (2) less time is devoted to instructional processes, and (3) least time to devising the student behaviors they wished to evoke. Morine (1976) confirmed the same results and also found that teachers paid little attention to diagnosing student needs, evaluating procedures and developing alternative course of action. However, all researchers alluded to the importance of using student interests in the planning process. Colbert (1979) found that teachers formulate content objectives as the first step on their planning. The second step she found to be the identification of pupil activities and teaching procedures appropriate for the content objectives for a particular group of pupils. Conclusions indicated that adequate goal setting, which involves controlling the content and identification of appropriate activities and procedures, better enables a teacher to control his classroom environment.

Yinger (1978) in a case study, found the components of a planning process model to be problem finding, problem formation and implementation. The present study concerns itself with gathering descriptions about goal formulation which is a component in problem finding since pre-service teachers are frequently overwhelmed by the teaching situation and often do not know how to identify goals related to content, students or class.

Yinger (1978) and Morine (1975b) state that during the problem finding stage (i.e., discovering of a suitable goal) the order of the components is: selecting a topic (i.e., content objective), stating the objective, considering possible steps to be followed, preparing instructional materials, and arranging classroom events. However, Morine (1975b) states there is a 'missing link' in this chain of events. She states that classroom interaction and pupil feedback must be included. With such elaborated preactive planning she contends that the teacher will be able to make decisions regarding his own behavior and that of his class. She also advocates that the teacher should create connections between the instructional strategies and interactive techniques (e.g., giving additional information to pupils, and commenting on pupils' answers) in order better to control classroom events.

Yinger (1978) suggests that the teacher gains competence from experience in the problem finding stage of planning. However, Mayer (1977) in his assimilation-to-schema concept suggests that acquiring this competence is possible without experience. Surely a teacher is better able to learn planning from adequate training in sequencing information and planning interactions than from trial and error experiences and such training will help eliminate many early mistakes being made on the job.

In summary, problem finding should not be left to teaching experience alone, but should also include consideration of the pupils' information systems if meaningful learning is most effectively to occur.

The present researcher questions Yinger's (1978) notion that the problem finding stage is only attainable from experience within the classroom. She believes, on the basis of studies conducted with learning and memory and the sequencing of instruction by Mayer (1977), that the decisions connected with this stage are subject to training. Although individuals collect and process information in different ways, it is possible to train pre-service teachers in interactive decision making. Morine (1975a, b, and 1976) and MacKay and Marland (1978) support the inclusion of decision making training during the problem finding stage of planning. These conclusions have led this researcher to believe that training in the problem finding stage and decisions connected with it are possible in pre-service education.

Morine (1975b) found that teachers produce two types of lesson plan: a detailed plan containing a crossing of interrelated events including objectives, activities, interactions and feedback, and a plan mainly narrative in structure which does not include any of the above details. She found that the two plans reflected two different ways in which teachers process information; the detailed one illustrated interactive decision making which resulted in predictable events for the classroom behavior while the short plan did not. Morine (1975b) then proposed three training techniques for decision making in order to make teachers more proficient at including interactions and feedback in their planning. The techniques are: comparing alternate procedures, adapting procedures to pupil differences, and noticing interactive decisions. The present study will investigate the planning of interactive decisions and their effects with pre-service teachers. Such investigation is recommended by Colbert (1979), Yinger (1978), Doyle (1978) and Clark (1978).

If how a teacher behaves in class is dependent not only upon his actions but also upon his thinking, it is important to study both overt and covert behaviors in pre-service education. Despite the research difficulties in gathering information concerning teacher decision making, which involves identification of teachers' behaviors and their thoughts about these behaviors, this type of research is necessary because most teachers' thoughts are still concerned with instruction.

MacKay and Marland (1978) and MacKay (1979a) have suggested that stimulated recall be used for training teachers in decision making in order for them to learn to plan effectively. This method helps the teacher identify his thought processes and his overt instructional behaviors. MacKay (1979a) concludes: "there is a clear relationship between thoughts and classroom behavior and behavioral observation does not, by itself, provide a complete explanation for classroom processes." (p. 16). Although the present study employed stimulated recall to gather planning information, the above research suggests that teacher educators use stimulated recall as a training method in preactive decision making.

Section Summary

Because of the close relationship between learning concepts and planning theories, this section summarizes both.

Much has been learned about learning processes which are effective for classroom teaching. During the last twenty years, Conners (1978) has isolated some twenty such propositions which are beneficial for instruction. Some researchers including Watson (1960) have formulated psychological propositions which are important for learning and for guiding teaching behaviors. Other researchers including Seagoe (1970) have applied these propositions to the classroom. Although Seagoe, Watson and others have thoroughly investigated learning theory and classroom instruction, the relating of psychological propositions to classroom teaching has not yet been adequately researched, and has resulted in two main criticisms. One of these concerns the over-emphasis on laboratory experimentation, while the other deplores the lack of agreement among researchers as to what constitutes a psychology relevant to classroom learning behaviors. Therefore, research into classroom complexities and human learning conditions is needed.

Modelling and feedback used in microteaching provides researchers with insights into the relationship between theory and practise. Modelling research indicates that the following are important for learning: an effectively modelled event, a systematic presentation for the modelled event, and the use of appropriate reinforcement following it. Borg _et al_. (1970) advocate that the teacher-educator see modelling as a three step process: (1) the learner observes a model teaching episode in which particular skills are demonstrated, (2) he attempt to shape his behavior on those of the model, and (3) he receives feedback on his performance. The present study investigates the areas of modelling and feedback and its effects on the learner.

To be more fully understood, modelling and feedback should be considered in association with the individual learner's information processing system. Mayer's (1977) research indicated that the assimilation-to-schema concept has much usefulness for sequencing instruction. Ausubel observed that three conditions are necessary for meaningful learning to occur: (1) the reception of the new material by the learner,

(2) the availability of a cognitive structure to which the new material can be assimilated, and (3) the presence of an active cognitive structure during learning. Mayer (1977) found that rote learning involves only the first of these conditions and that meaningful learning involved conditions two and three since they concern the learner's internal state. Mayer (1977) goes on to stress the importance of sequencing instruction in order to make conditions two and three possible. He finally proposes the need for planning sequential instruction for learning (meaningful).

Classroom planning is important for the teacher and evidence suggests that most teachers do some type of planning. Although the 'integrated-means-and-end' model has replaced the means-and-end model in educational thought, both models have the establishment of goals and subsequent strategies as their basic components. Unlike the means-and-end model, however, in the integrated-means-and-end model, the goal decisions are made in light of both the content and the students' interests.

The development of the integrated-means-and-end model has led to preactive planning, the sequencing of information and the use of interaction variables. The researches of Colert (1979), Yinger (1978) and Morine (1975b) support the use of this type of planning. Yinger (1978) also lists three stages of lesson planning: problem finding, problem formation, and implementation. The main emphasis for the present study is discovering how subjects plan adequate goals (i.e., problem finding) since the present researcher believes this to be the greatest problem area for the pre-service teacher. Although Yinger states problem finding can be learned only from experience, the present researcher questions this notion. Surely teachers will be better able to plan if they incorporate Mayer's (1977) theories of assimilating information and structuring materials, and Morine's (1975b) findings on interactive planning.

Research supports the conclusion that the planning process is enhanced by interactive techniques and instructional decision making. MacKay and Marland (1978) advocate the usefulness of stimulated recall for this type of training.

CHAPTER III

DESIGN, PROCEDURES AND ANALYSIS OF DATA

The purpose of this chapter is to describe the research design, the sample, research questions, data sources, procedures and the analysis used.

The Design

This research project used a quasi-experimental design, a pre-test post-test design and descriptive information. The experimental section of the study employed two experimental groups each receiving different types of feedback during the microteaching of a music lesson as well as a control group which received only a basic treatment of lectures and demonstrations. The pre-post test design was used to investigate the effects of modelling in the treatment. In addition, tests of significance were calculated to determine the effects of feedback. The qualitative (descriptive) section is a stimulated recall analysis of the experimental subjects' thoughts about planning.

The experimental and control groups were investigated in a natural setting (i.e., university teaching laboratory) using a pre-post treatment design. Fifteen pre-service teachers were observed before and after the treatment period, for a total of six teaching hours each over a period of three weeks (two hours of class per week). They were observed by coders using the Quest Rating Instrument (see Appendix F). The treatment encompassed modelled presentations and demonstrations exhibiting thirty-one teaching behaviors believed to be effective for teaching a secondary music lesson. The experimental groups also received two microteaching sessions in which they practised teaching the thirty-one behaviors with their peers. Two types of feedback modes were used: one experimental Group (A) received verbal feedback from the supervisor; while the other experimental Group (B) received written comments. The control group did not participate in the microteaching sessions or receive any feedback. All groups were observed before and after the treatment period. All subjects were observed in two instrumental settings: full-rehearsals and sectionals. Some of the subjects were also observed during the teaching of general music.

The lessons were observed and the behaviors were noted by trained observers (i.e., coders) who used a reliable observation instrument (see Appendix F). The observations yielded data relating behavior ratings, classroom interactions and classroom events (i.e., drill, activities and classroom management). These behaviors were later analyzed and correlated with the recorded classroom interactions and events. The researcher also compared similar behaviors observed in the CRT (Center for Research in Teaching) sample with those of her pre-service sample.

The descriptive section of the study included the pre-service trachers' thought processes using stimulated recall. The thought processes of the experimental subjects were investigated with the SRI (Stimulated Recall Interview) technique after the final microteaching mini-lesson. Two microteaching lessons were prepared and taught to peers by the pre-service teachers. The microteaching mini-lessons lasted from ten to fifteen minutes and then each subject was given feedback. After the first mini-lesson was videotaped, the supervisor administered either verbal or written comments regarding the subjects' teaching performances.

After the second (i.e., last) mini-lesson was videotaped a directed stimulated recall interview (SRI) which investigated behavior change and planning processes was conducted within forty-eight hours with the experimental subjects. The SRI's were audio-taped and transcribed. The data were then analyzed and yielded information regarding subjects' thoughts concerning lesson and behavior changes. These data also provided a basis for describing the teaching behaviors and their relationships to events in the lesson. Eight pre-service transcripts were analyzed in order to obtain information about the pre-service teachers' changed behaviors and planning processes.

The Sample

Fifteen pre-service teachers enrolled in the secondary music curriculum and instruction course at the University of Alberta took part in the study. These student teachers had no prior classroom teaching experience. The backgrounds of the subjects varied according to their major emphasis: band, orchestra, keyboard or choral; and the extent to which they had completed their major area of study. Most subjects had keyboard backgrounds (e.g., thirteen out of fifteen) and also an orchestra or band speciality, while the two remaining were a vocalist and a guitarist. All but four subjects had prior experience playing in school bands, or orchestras or both. Both the experimental and control groups attended curriculum and instruction classes involving lectures and demonstrations. Only the experimental groups attended the microteaching sessions.

The pre-service teachers were concurrently enrolled in the Music Education Laboratory program and the Curriculum and Instruction class.

The music education laboratory (Melab) is a workshop program in secondary practicum. While the main emphasis in Melab is on band performances, strings, chorus, and general music also are taught by the student teachers. The program takes place on Wednesday evenings and Saturday mornings during the university year. Children are recruited from the junior high schools of Edmonton and all instruction is given by the student teachers closely supervised by professors, graduate students, and master teachers.

Melab was administered during the period of this study by a professor and two doctoral students. These three people were joined by several master teachers from the high schools of Edmonton. Approximately half of the scheduled teaching time of the student teachers was supervised. The doctoral students also participated in teaching the curriculum and instruction class.

CRT (Center for Research in Teaching) Project Description

In addition to the pre-service teacher sample, a CRT sample was included in the final study for comparison with the pre-service music teachers.

The CRT project was a quasi-experimental research and development study which was operated on a joint basis by the Center for Research in Teaching and the Edmonton Public School District. The project offered research possibilities in teaching skills and behaviors.

During the period of this study, there were three groups involved in the project: ten research associates, sixty in-service teachers and fifteen coders. The research associates were ten staff members from the Edmonton School District who were working on a one-day per week basis at the University of Alberta during the school year 1978-79. Under the school system's program of partial leaves, these people were enrolled as special students and received course credit for their extensive studies of the literature on teaching research. In addition, as researchers for CRT, they conducted an in-service program involving sixty teachers and assisted with the collection, analysis and reporting of the data from January to June, 1979 (see MacKay, CRT Report No. 79-1-3, 1979b). The in-service teachers were drawn from thirty Edmonton schools and were assigned to two CRT project groups called Mode A and Mode B. The CRT in-service teachers and the researcher's pre-service teachers were both given treatment on certain teaching behaviors. The means of the behaviors common to both groups were compared in order to ascertain if the exit behaviors of the pre-service teachers were significantly different from the entry behaviors of the in-service teachers. However, the treatment methods for the pre-service and in-service teachers were different. Borg et al. (1970) found advantages in using different training methods with pre-service and in-service teachers. Two methods were used with the in-service teachers, one involving more teacher interaction than the other. One treatment mode (Mode A) used booklets and lectures outlining specific teaching behaviors; the other (Mode B) used videotaped presentations, worksheets, role-playing episodes, and small group discussions in addition to booklets and lectures. Pre- and post-treatment tests were then given to the groups to determine if the treatment affected the teaching behaviors.

Fifteen certified teachers who served as coders in both the researcher's study and the CRT project were trained to use the classroom observation instrument. This training involved observing tapes of teaching episodes, discussing the observation and generally becoming familiar with the observation system. After observing a number of sample teaching situations, the coders (in pairs) visited grade three and six elementary mathematics and English classes. This procedure was repeated until 75% reliability (Scott, 1955) in the use of the observation instrument was attained. The coders then visited the in-service teachers for six hours before and six hours after the treatment. After the coders completed the pre-treatment observations, the observation booklets which they had compiled were submitted for analysis. The same procedure was followed during the post-treatment.

The CRT project focussed on the elementary grades in mathematics and language arts, and in some ways resembled projects that were conducted at the Research and Development Center at the University of Texas and N. L. Gage's research at Stanford University. For the Edmonton CRT projects, sets of teaching behaviors (see Appendix D) which recent literature support as desirable at the various grade levels and for the subject areas involved in this study were translated into behavioral recommendations and were presented to the in-service teachers.

In the CRT project, several questions were examined:

1. Can short-term training have an impact on the behavior of teachers in an experimental situation?
2. Will there be substantial differences in the behaviors of the teachers when comparing the pre- and post-treatment data?
3. What impact will the recommended behaviors have upon pupil achievement in mathematics and language arts at the grade three and grade six levels?
4. What impact will a research and development project of this nature have upon the operation of both the CRT and school district?

This particular research project was completed in May, 1979, and the report of the findings was completed by December, 1979. (See MacKay, CRT Report No. 79-1-3, 1979b).

Specific Research Questions

The present study seeks answers to the following questions:

1. How did the experimental teachers differ from the control teachers in their use of the criterion behaviors and what were the effects of such differences in the classroom?

   In order to investigate the effects of modelling and feedback in the sample groups, significant differences were calculated in the means of the behaviors, the classroom events (drill, activities and classroom management) and interactions used (product and process questions). Specifically, were any of the behaviors significantly correlated with the classroom events?

2. What were the effects of the use of the criterion behaviors in different junior high music classrooms?

   In order to investigate the effectiveness of the 'direct instruction' behaviors in secondary classes, pre- and post-test academic engagement times were calculated for the experimental and control groups. Two calculations were performed: the first to determine the effectiveness of the behaviors and the second, the behaviors' effect on the classroom. The effectiveness of the behaviors was discussed in terms of the academic engagement times for both the experimental and control groups in different music contexts. The behaviors' effect on the classroom was discussed in terms of the allotted times for the various classroom events (i.e., drill, activities and classroom management) for each group. Specifically, were the treatment behaviors effective for secondary classes and what were the behavior effects on the different groups and the different music contexts?

3. What effect did the feedback modes have on the behavior means exhibited by the two experimental groups?

   When compared with the control group means, did the experimental group implement the behaviors more effectively? How did each of the group perceive the effectiveness of the feedback?

4. Do the behavior means of the in-service teaching behaviors differ significantly from those of the pre-service teachers?

   Of the thirty-one instructional behaviors observed, thirteen which were common to both the researcher's experimental and control groups and the in-service (CRT) group were compared. The comparison was calculated between the in-service pre-test score and the pre-service pre- and post-test scores. The latter comparison was conducted to gather additional information about modelling while the former ascertained any group differences.

5. How did each type of feedback affect each subject? What similarities appeared in the thoughts of the two experimental group members? Did the type of feedback influence a subject's future lesson planning? Were the results such as to permit the researcher to formulate decisions regarding lesson planning for teacher education in general?

Delimitations of the Study

In addition to those listed on page 13, the final study also includes the following delimitations:

1. The final study was restricted to fifteen student teachers, therefore reducing the generalizability of the results obtained by statistical analysis.
2. Although it might have been possible for the observation system to have examined teacher and pupil use of time in any learning content area, this study was restricted to full-rehearsal, sectional and general music classes.
3. The observation time was restricted to no more than six hours for each pre-service teacher.
4. The observations were made in Melab as opposed to a school classroom. A variation of the Melab pre-service teaching situation included the supervision by three faculty consultants (cf., only one in school settings).
5. The data obtained from the SRI's (stimulated recall interviews) were restricted to an analysis of planning phenomena. Planning phenomena topics included: goals and purposes,

instructional delivery system, instructional strategies, and content structure and sequence. The directed stimulated thoughts of the pre-service students were confined to the above planning topics.

6. The interviews were restricted to the eight subjects in the two experimental groups.

Data Sources

Instrumental Instructional Behaviors

The following thirty-one behaviors relate to instructional strategies used in instrumental classes. These behaviors are concerned with getting the students' attention and maintaining their interest. The behaviors center mainly on the organization and clarity of an effective rehearsal situation which emphasizes active student participation in a variety of learning activities. The behaviors are categorized as specific instructional, music instructional and interaction behaviors and are presented below. (Note: Because of the nature of the areas examined, many of the behaviors could also be termed instructional strategies).

I. Direct Instructional Behaviors
  A. Getting the Children's Attention
    1. Teachers should not begin speaking to the group until all the students are paying attention.
    2. Teachers should stop speaking or instruct a contributing student to stop speaking until all students are paying attention.
  B. Introducing a Lesson
    3. The teacher introduces the lesson with a brief overview.
    4. The teacher presents the objective or new words to be emphasized clearly at the beginning of the band period.

5. After presenting the objective or new words, the teacher has the students note them.
6. A demonstration or explanation precedes the children's attempt to do the work. This would include warm-up and technique exercises which help clarify the students' understanding of the objective.

C. Presentation of Material

7. Teachers should present information to students in a clear, orderly, well-organized manner. The teacher reviews at the beginning and as needed throughout the lesson; this supplies a review of past learning.
8. Teachers should communicate at the pupils' level of comprehension.
9. Teachers should use a variety of instructional techniques -- adapting instruction to meet the learning needs of individuals.
10. Teachers should optimize academic learning time. Pupils should be actively involved and productively engaged in learning tasks.

D. Music Instructional Techniques

11. Teachers select repertoire material which is suitable to students' level of performance and understanding.
12. The teacher puts the highlight or concept back in the repertoire with increased student understanding.

E. Summary of the Lesson

13. Near the end of the lesson, the teacher reviews the main ideas and essential content of the lesson.
14. The teacher develops an appropriate evaluation system either by proficiency level of performance or by written responses to check students' understanding.
15. The teacher displays or plays the work of the students and leaves them with a feeling of accomplishment.

F. Praise and Criticism

16. Criticism should be used with discretion and should include specification of desirable or correct alternatives.
17. Teachers should direct disciplinary action accurately.
18. Teachers should prevent misbehaviors from continuing.

II. Teaching Style Behaviors

19. WITHITNESS: The teacher was aware of what was going on in the classroom.

20. OVERLAPPINGNESS: The teacher was able to attend to more than one issue at a time.

21. SMOOTHNESS: The teacher facilitated the smooth flow of the lesson or a smooth transition from one activity to another.

22. MOMENTUM: The teacher's behavior maintained the pace of the lesson.

23. CLARITY: The teacher was clear in presentations to the class.

24. PERSUASIVENESS: The teacher was able to motivate children.

25. WARMTH: The teacher provided evidence of "caring," "accepting," and "valuing" for the children.

26. EMPATHY: The teacher responded accurately to both obvious and less obvious meanings, feelings and experiences of the children.

III. Interaction Behaviors

27. Many different pupils were selected by the teacher to respond to questions.
28. When pupils' answers were incorrect or only partially correct, the teacher used techniques such as rephrasing, giving clues, demonstrating or asking a new question to help the pupil to give improved response.
29. The teacher used praise to reward outstanding work as well as to encourage pupils who were not always able to do outstanding work.
30. The teacher used mild criticism on occasion to communicate expectations to more able pupils.
31. When pupils initiated the interaction, the teacher accepted and integrated the pupil question, comment or other contribution.

These eighteen specific behaviors, eight teaching styles behaviors, and five interaction behaviors are believed to promote effective learning in an instructional situation.

Research Instruments

Classroom Observation System: One of the procedures of the study concerned the investigation of the effectiveness of the researcher's observation system. The following is a summary description of the Quest Observation System (MacKay, CRT Report No. 79-1-3, 1979b). The data collection device used to investigate this problem was a coding system very similar to the one used by the Texas Research and Development Study (1977) which was adapted from the Brophy-Good Dyadic Interaction Coding System. (Good and Brophy, 1973; Brophy and Evertson, 1973). Both the control and experimental subjects were each observed for approximately six hours using this system and the resulting classroom data were recorded.

The diversity of the processes occurring in the classroom necessitated the use of several different measuring scales. The scales used in the observation system focussed upon both the pupil's and the teacher's verbal and nonverbal interaction, and measured both cognitive and affective components separately. A number of checklists, rating scales and class descriptions were used to assess classroom behavior in its many dimensions. Checklists were used to record the frequency with which behaviors and types of interaction occurred during a period of observation (see T.M.O. [Three Minute Observation] in Appendix F).

Two kinds of rating scales provided data from which the observers were able to infer the degree to which a trait or attribute was possessed by a teacher or a pupil.

Although both low and high inference ratings were utilized by the observer, the latter was deemed more appropriate for the present study. The low inference scale which involved tallies of classroom interactions was only employed in the T.M.O. (see Three Minute Observation, Appendix F) while the high inference scale was employed for all the thirty-one behaviors. The latter category (i.e., high inference) is more descriptive than judgemental and inferential. In addition a running tally of classroom activities (see C.A.D. [Classroom Activity

Description] in Appendix F) provided a sequential diary and a record of the time spent on drill, activities and classroom management in the classroom.

In addition to the systematic observation system used by the coders, other data sources were also used. These were: directed stimulated recall techniques used to determine the effect of the feedback on each student teacher (see description below), a reliability check on the amount and types of feedback given to the subjects, and a validity check on the reliability of the supervisor's perception of the use of the behaviors. These are explained further in the Sample Treatment Section.

Stimulated Recall Methodology: Stimulated recall is an introspective methodology in which audio or visual cues or both are presented to assist a subject to recall the covert mental activities which the cues stimulated.

Bloom (1953) states that "the basic idea underlying the method of stimulated recall is that a subject may be enabled to relive an original situation with great vividness and accuracy if he is presented with a large number of cues or stimuli which occurred during the original situation." (p. 162).

In the present research project, the stimulated recall procedure involved the subjects' viewing videotapes of their most recent microteaching session. Bloom (1953, 1954) discovered that the time lag between the obtaining and the showing of the stimulus should be no longer than 48-hours, otherwise the interviewees would experience memory loss when reliving the teaching experience and recalling what they were thinking during the videotaped lesson. In keeping with

Bloom's findings, videotape viewings and interviews took place within 48-hours after the lessons were taught.

The present researcher was concerned with only the effects of the planning and the specificity of the behavior change. Questions were concerned with the noticing of the behaviors and the justification of their usage. This is in contrast with a more global type of stimulated recall where all the teacher's covert thoughts were investigated in the researches of Conners, 1978; King, 1979; Cooper, 1979 and Marland, 1977. In addition, the interviewer for the present study was not the researcher but another Melab supervisor.

Because of the exploratory state of research in directed stimulated recall on preactive teaching, the inexperience of the researcher and interviewer with interview techniques, and the nature of the proposed questions, a pilot study was conducted. This pilot study involved the taping of a former pre-service teacher teaching a band lesson in a junior high school classroom. This pre-service teacher was then shown the tape and the researcher and the interviewer conducted the stimulated recall interview. The factors considered during the pilot study were as follows:

1. Length of the lesson taped.
2. Length of the stimulated recall interview.
3. Degree of focal strength set by the interviewer.
4. Choice of modes of questions by the interviewer and researcher.
5. Whether the interviews were structured or non-structured.

The results of the pilot set the stage for procedures used in the final study.

Background Questionnaires: Questionnaires were administered at the beginning of the university year to all secondary music education pre-service teachers. The questionnaires sought mainly background information: previous university music courses completed, courses presently being taken, music courses completed in public school, duration of private study, private music examinations completed, and previous experience as a performer, director or teacher in school, church or elsewhere (see Appendix Q). The information obtained from the pre-service teachers is discussed under results and conclusions in Chapter V, along with a description of each subject's background and his individual pre- and post-test scores and his stimulated recall thoughts.

Instructional Behavior Evaluation: After the treatment, questionnaires were administered to the pre-service teachers to discover their personal opinions about the instructional behaviors: the usefulness of the teaching behaviors, the lectures, the demonstrations, and the microteaching, the effectiveness of the assistance given during the planning of instruction, and the usefulness of the treatment to the subject in implementing the instrumental instructional behaviors in their teaching (see Appendix P).

Results obtained from the questionnaires indicated that all members of the class felt that the behaviors were useful and that the treatment method was either good or excellent. It is of interest to observe the relationship of the information given in these questionnaires to the comments made by the same subjects in the stimulated recall interviews (for results see Chapter V).

The Pilot Study

Stage I

The objective of Stage I was to develop a model for training music pre-service teachers in the skills needed to teach a lesson on principles of Manhattanville Music Curriculum Project (MMCP).

Forty pre-service teachers who were enrolled in the University of Alberta Curriculum and Instruction course during 1977-78 were instructed on the principles of MMCP and later viewed demonstrations and taped episodes of teaching situations. These demonstrations were later discussed and analyzed with regards to the skills used. Forms for evaluation teaching skills and classroom interactions were also utilized by the pre-service teachers at the end of the treatment.

Stage II

The objective of Stage II was to validate the effectiveness of the MMCP model developed in Stage I.

Validation here meant the process of making the MMCP model theoretically and operationally sound. The treatment for MMCP was presented as above, then an evaluation questionnaire was distributed. The *Instructional Behavioral Evaluation* (see Appendix P) rated the effectiveness of the MMCP in terms of usefulness, clarity, interest level and structure. In addition, questions concerning the strengths and weaknesses of the treatment were also answered.

Stage III

The objective of Stage III was to delineate the study samples, to implement the treatment, and to determine the effects of the processes used in the microteaching.

The forty subjects enrolled in the University's Secondary Music Method course were divided into four groups: one control and three experimental groups (Groups A, B and C). All groups received the treatment procedure described in Stage I for the MMCP constructs. In addition, the three experimental groups practised microteaching two mini-lessons on the concepts of MMCP and received one of three modes of feedback. The seven subjects in Group A received the feedback of peers and forms; the nine subjects in Group B received the feedback of supervisor and peers, and the eleven subjects in Group C received the feedback of peers, forms and supervisor. The control group did not participate in the microteaching and hence did not receive any feedback. The entire treatment period lasted a total of six weeks.

After the completion of the mini-lessons for microteaching, all subjects were to teach a Manhattanville lesson to the Melab junior high students. These lessons were videotaped and evaluated by independent judges. The evaluation criteria was based on the number of the skills practised and the level of proficiency attained in each skill. It was hypothesized that the teaching skills used in the mini-lessons would transfer to the Melab classes. Planning assistance was given by the researcher to any subject upon request. All the videotaped Melab lessons were evaluated on the Manhattanville Teaching Form (see Appendix A).

Stage IV

The objective of Stage IV was to collect and interpret the data.

The data was collected according to a post-test design and consisted of ten skills which were divided into: introducing a lesson, presenting the concept, and summarizing the lesson. These skills were evaluated on the Manhattanville Evaluation Form (see Appendix A).

The primary aim of the study was to compare the number of skills used by the experimental groups with that of the control. Skill assessment was rated by trained observers with an interjudge reliability of 90%. Mean comparisons tested the hypothesis: student teachers who attend trial-teaching sessions will score significantly higher on the number of teaching skills than those who do not attend such sessions.

The secondary aim of the study was to investigate the effects of the various types of feedback used in the trial-teaching. This involved comparing the means of both the number of skills used and the level of proficiency on the skills observed. Both sets of observations were scored as very satisfactory (3), satisfactory (2), and unsatisfactory (1). Non-parametric tests were then used throughout the pilot: chi square to compare the significance of the number of skills used for hypothesis one and hypothesis two, the Mann Whitney U Test to test the level of skill proficiency between the experimental groups for hypothesis three, and the Kolmogorov-Smirnov Test to test whether the results from the experimental group were significantly better than the control group for hypothesis four.

Data Analysis

Hypothesis One: There will be no significant difference between the number of acquired skills in the control and experimental groups.

Results: The results for hypothesis one are discussed under results of hypothesis two.

Hypothesis Two: There will be no significant differences between the number of acquired skills in the three experimental groups: A, B, or C.

Results: Thirteen subjects were rated to have the following means: four subjects in the control received a mean of 4.50, three subjects in Group A had a mean of 5.33, three subjects in Group B received a mean of 6.33 and three subjects in Group C received a mean score of 8.33.

Hypothesis Three: There will be no significant differences between the proficiency level of the acquired skills exhibited by each of the experimental groups.

Results: (Mann-Whitney U Test) the decision to accept or reject the hypothesis between the experimental groups was as follows: Group A to C - reject Ho., Group B to C - accept Ho., Group A to B - reject Ho.

Hypothesis Four: The scores of the combined experimental groups will not be significantly 'better' than those of the control group.

Results: (Kolmogorov-Smirnov Two Independent Sample Test) The scores obtained for the experimental and control were as follows: in the score range of 15-19 were 2 experimental subjects and 0 control subjects; in the score range of 10-14 were 2 experimental subjects and 1 control; in the score range of 5-9 - 2 experimental subjects and 0 control; in the score range of 0-4 - 3 experimental subjects and 3 control. Decision rule was not to reject.

Results and Conclusions

The results of the pilot study led the researcher to formulate conclusions based on analysis and observation in three main areas: the instructional plan, the instruments, and the feedback modes.

The information obtained from the questionnaire administered at the end of the treatment enabled the researcher to make a number of conclusions: (1) the behaviors (e.g., discovery - learning strategies) suggested in the Manhattanville model were too broad to be presented within the limited constraints of the treatment. (2) The time constraints made it impossible for the pre-service teachers to incorporate an adequate number of the essential teaching principles. (3) The instructional behaviors needed for small group instruction in MMCP were found inappropriate because of the limitations of the study. Finally, (4) it was observed that when teachers interacted with students (provided supportive verbal behavior, showed enthusiasm, gave encouragement) better student performance in music occurred. This supports the research of Anderson _et al_. (1977) which demonstrates that class interactions are important for pupil learning.

Videotaping and scoring procedures in the final teaching performance of MMCP were also ineffective. Technical problems encountered with equipment and the inadequate quality of the tapes made it difficult to obtain tapes displaying both pupil and teacher behavior simultaneously. As a result, the evaluation results were often insufficient. The method of scoring the Manhattanville instrument (see Appendix A) left unanswered the question of what constituted an adequate score? For these reasons, alternate observation and scoring systems were sought.

The modes of feedback employed in the pilot study led to questions regarding the appropriateness of the experimental variables. Group C which had the feedback of peers, forms and supervisor performed significantly better than Group A (peers and forms) and Group B (forms and supervisor). This resulted in ambiguity as to whether the peers or the supervisor were responsible for the change.

Implications for the Final Study

The problems encountered in the MMCP teaching method led to the formulation of a new set of instructional behaviors which are to be found in the Instrumental Instructional System (see Appendix E) while observation and scoring problems led to the development of the expanded Quest Observation System (see Appendix F).

The problems encountered in the feedback modes and data collection led to several changes. Because of the small number of student teachers in the sample, it was decided to use two modes of feedback and the final study includes a description of these. The feedback to be received by Group A was videotape and verbal comments from the supervisor while that of Group B was videotape and written forms from the supervisor. There were four basic reasons for selecting the feedback modes outlined above.

Firstly, ample evidence is available to suggest the effectiveness of the supervisor in the pre-service teaching experience (Blumberg, 1978); however, there are practical constraints placed on how university teacher-educators can do their work. Often they must decide whether to give verbal or written feedback to pre-service teachers, both not being possible due to monetary or time limitations. The present study can help decide the relative effectiveness of these two, thus, assisting the time constrainted supervisor to make more informed decisions.

Secondly, from the following it is clear that written comments (i.e., forms) are valuable,

> ...when teachers interact in a purposeful way with feedback provided from recording techniques (i.e., forms) they are indeed able to translate their ideas into behaviors and thereby gain the kind of musical and academic learning they desire (Yarborough and Madsen, 1976; p. 39)

However, when to use forms and whether written or verbal comments can be used effectively are questions which the present study discusses.

Thirdly, Dunkin et al. (1973) have demonstrated the effectiveness of videotaping in the student teaching experience. But whether a supervisor should employ written or verbal comments during the video playback remains unexplored and forms a major part of this study.

Fourthly, results of the pilot study indicate a significant difference in favor of Group B and Group C, both of which made use of a supervisor, as opposed to Group A which did not use a supervisor.

For the final study, the above analysis led the researcher to speculate that subjects who received feedback consisting of videotape and verbal comments from the supervisor, will perform better on the instructional behaviors. The results of the pilot study indicated that when verbal comments were given by the supervisor, the treatment groups performed more skills than the group which did not use a supervisor. From the observation results obtained in the final study both quantitative and qualitative data concerning feedback are discussed in Chapter V - Qualitative Results.

The Final Study

Preparatory Procedure

This study was conducted at the University of Alberta in 1978-79. The preparatory procedures involved three steps which are outlined below.

Step one of the investigation involved obtaining information about fifteen pre-service teachers used in the study in order to determine experimental grouping. Facts concerning previous instrumental experience, type and length of lessons received, private teaching experience, age, years in university, and personal background were included. As well, the supervisor's teacher ratings in Melab were sought and used.

Step two involved the assignment of the student teachers to the control and two experimental groups based on a stratified random procedure. Two main criteria were considered for the stratified grouping. One was the amount of previous contact that the researcher had with five of the subjects and the other was the previous band experience each pre-service teacher had. This type of grouping helped avoid the chance that all the experienced subjects might be in one group. An additional criterion was that the timetables of the pre-service teachers determined when the microteaching sessions were held. Using these procedures the sample was divided into three equal groups.

Step three involved the Melab class observations conducted by the coders, and the subsequent re-training of these coders. The observations took place before and after the treatment. Since the coders had originally been trained in observing elementary mathematics and English behaviors, they needed further training in observing secondary music behaviors. This process took two hours before the first observation period and an additional hour prior to the final one. Since the coders had been observing elementary classrooms during the researcher's treatment, an additional hour of rebriefing on secondary music behaviors was deemed necessary before the post-test observations. All observations were conducted in each of the three classes before and after the treatment period. After the coders had completed the observation booklets, the booklets were immediately collected by the researcher who tabulated and analyzed the results.

Sample Treatment

After the subjects had been assigned to the control (N=7) and two experimental groups (N_1=4, N_2=4), all received a treatment of modelled presentations on the thirty-one behaviors. These demonstrations were centered around behaviors for introducing the lesson, presenting information and summarizing the lesson. After discussing some of the theoretical aspects of MMCP, the subjects' viewed either taped or live demonstrations on MMCP lessons and then discussed their applicability for junior high instrumental or general music classes. Demonstrations were presented on the concepts of canons, imitation, phrases and accents. These concepts were taught later in the Melab classes in the post-test. After each of the presentations, distinguished features and cues of the behaviors were analyzed and discussed. The control group received this modelled treatment only while the two experimental groups practised the behaviors in two microteaching mini-lessons and received supervisor written of verbal comments.

In addition a further treatment procedure which consisted of practicing the behaviors (i.e., microteaching) with only the experimental groups was employed. The two experimental groups then taught two mini lessons in which Group A received feedback from supervisor's verbal comments and Group B from supervisor's written comments. Groups A and B were then interviewed with the SRI technique to obtain information about behavior change and lesson planning.

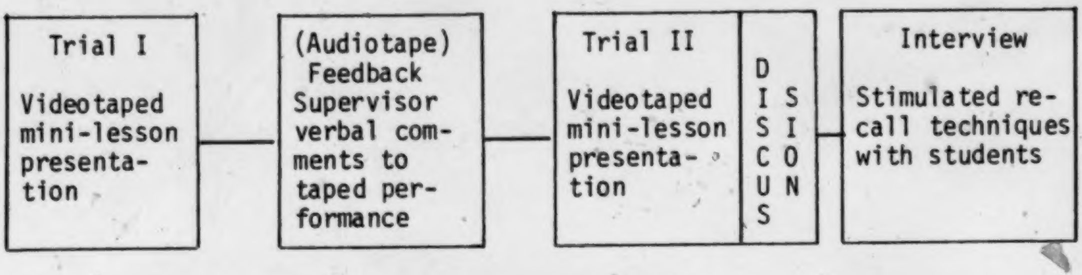
Group A students were assigned to the microteaching sessions where they received feedback on teaching mini-lessons. This feedback consisted of videotape and supervisor's verbal comments. The microteaching practise sessions were held once a week for three weeks and every subject conducted two mini-lessons using the treatment behaviors. One trial was conducted at the beginning of the session and the other at the end. In the initial trial experience, each subject was videotaped during his presentation which was later viewed, within thirty-six hours, by the supervisor and subject. During the viewing of his mini-lesson the subject received verbal feedback on his performance. The second mini-lesson was taught later and the subject then tried the suggestions made by the supervisor.

Two tests of feedback reliability were administered after the first trial. One checked the reliability of the supervisor in assessing the acquired skills, while the other checked the equality of the feedback given to the subjects. The first test was performed by an independent judge and the researcher who attained a reliability agreement of 84% (see Chapter III Reliability Tests). The second test was checked by an independent listener who heard the replayed feedback tapes and checked the quality of time, content and supportiveness given to each subject. From the results of the feedback reliability tests, it was concluded that the feedback given by the researcher was reliable.

The last activity following the second mini-lesson of microteaching involved a discussion with Group A subjects and the researcher which centered on the effectiveness of the behaviors used. In addition, the second mini-lesson was viewed by an independent interviewer who used stimulated recall procedures to investigate the thoughts of each Group A subject. The interview procedure was planned in terms of content, time and interactive directives as recommended by Bloom (1954). These taped interviews were later transcribed and behavior changes and planning processes were noted. A description of each experimental subject's thoughts is presented in Chapter V.

The following diagram is a flow-chart of the events for Group A.

Group A

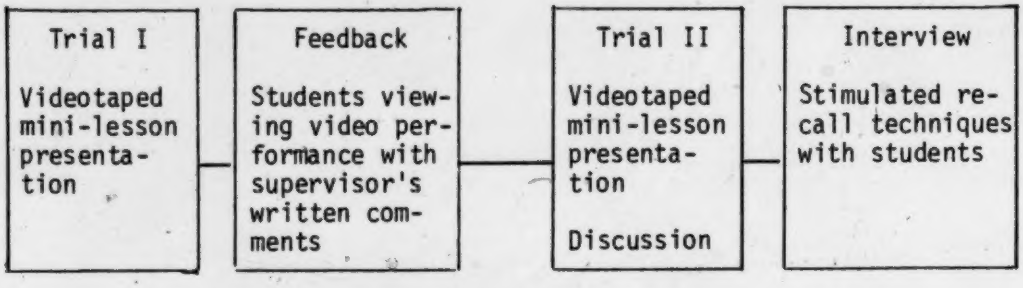

Trial I
Videotaped mini-lesson presentation
(Audiotape) Feedback
Supervisor verbal comments to taped performance
Trial II
Videotaped mini-lesson presentation
DISCUSSION
Interview
Stimulated recall techniques with students

Two reliability checks

Group B students were assigned to the microteaching sessions and met an additional one hour per week for this purpose. They received the feedback of videotape and supervisor's written comments. Like the members of Group A, members of Group B also presented mini-lessons in two trial sessions, one at the beginning and the other at the end of the treatment. After the initial trial session, the members of Group B received written comments from the supervisor which described the effectiveness of the behaviors they had used. The subjects viewed their videotaped performance with the assistance of these completed forms. This viewing technique contrasted with Group A subjects who viewed their taped performance with the supervisor present. After the second trial teaching lesson which was also videotaped, the tapes were used by the subject and independent interviewer for stimulated recall. These taped interviews were later transcribed and compared to those of the subjects in Group A. At the end of the microteaching experience, all Group B members participated in a general discussion which focussed on the behaviors used.

The following diagram presents a flow-chart of the events for Group B.

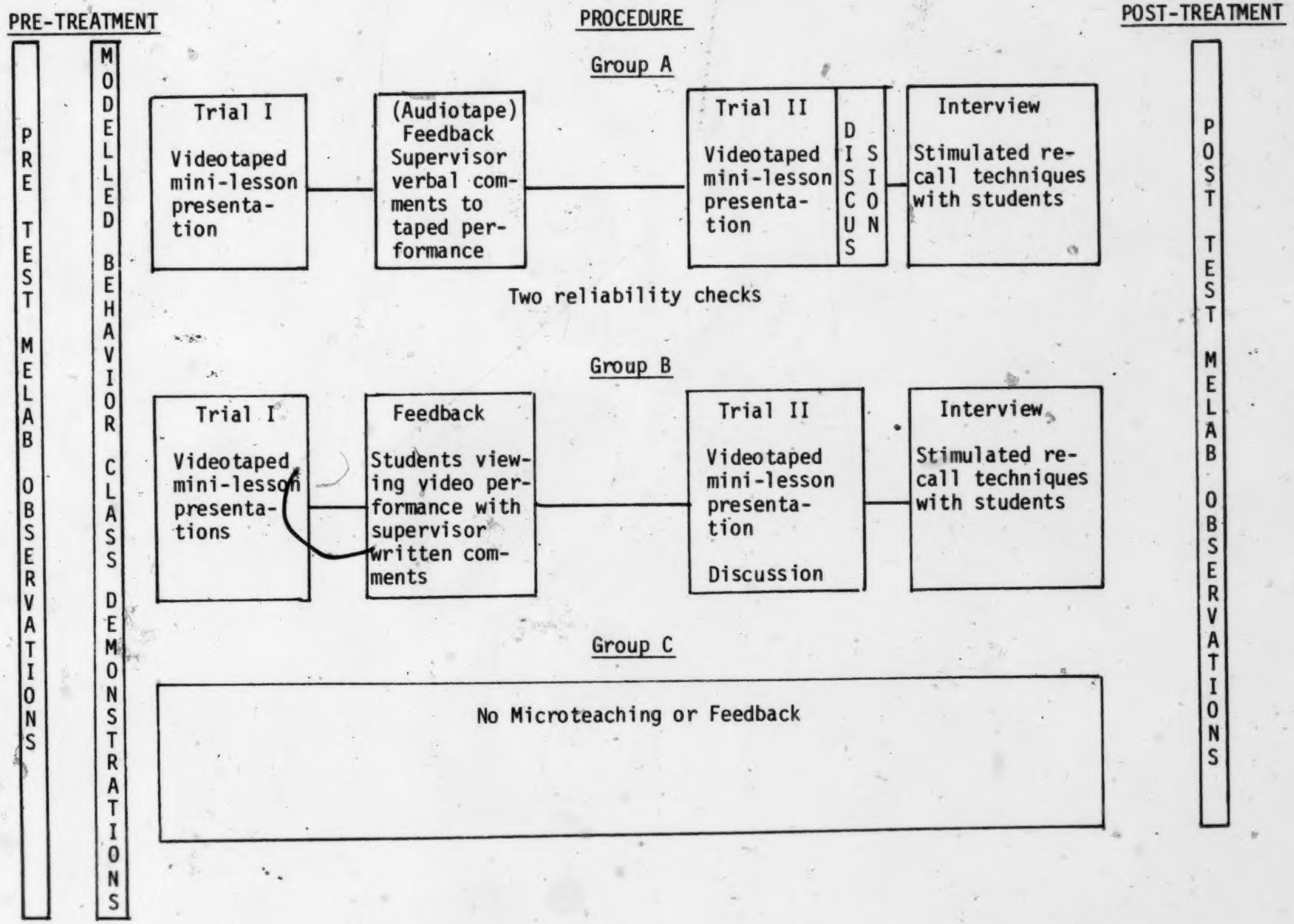
Group B


Trial I
Videotaped mini-lesson presentation
Feedback
Students viewing video performance with supervisor's written comments
Trial II
Videotaped mini-lesson presentation
Discussion
Interview
Stimulated recall techniques with students

At the end of the treatment, a questionnaire (see Appendix P) was administered to the subjects in all groups regarding the effectiveness of the treatment. It is of interest to note the level of agreement between the subjects' written comments in the questionnaire and their verbal comments given to the interviewer (see Chapter V).

Following is charted the treatment procedure for all groups (see Chart I).

CHART I - TREATMENT PROCEDURE


PRE-TREATMENT
PRE TEST MELAB OBSERVATIONS
MODELLED BEHAVIOR CLASS DEMONSTRATIONS
PROCEDURE
Group A
Trial I
Videotaped mini-lesson presentation
(Audiotape) Feedback
Supervisor verbal comments to taped performance
Trial II
Videotaped mini-lesson presentation
DISCUSSION
Interview
Stimulated recall techniques with students
Two reliability checks
Group B
Trial I
Videotaped mini-lesson presentations
Feedback
Students viewing video performance with supervisor written comments
Trial II
Videotaped mini-lesson presentation
Discussion
Interview
Stimulated recall techniques with students
Group C
No Microteaching or Feedback
POST-TREATMENT
POST TEST MELAB OBSERVATIONS

Summary of Procedures

The procedures of the study discussed in this chapter and to be pursued in further detail in the Analysis of Data, are tabulated into the following operational phases.

Preparatory Phase

1. Pilot study.
2. Designing a reliable observation instrument.
3. Observer training.
4. Placement of student teachers into the control and two experimental groups.
5. Familiarization by the researchers with the potential pre-service teachers through the study of background questionnaires, teaching timetables, and types of classes taught.

Treatment Phase

1. Designing an effective basic treatment consisting mainly of modelled events (i.e., videotapes, presentation and demonstrations).
2. Structuring microteaching sessions into two practise sessions for each pre-service teacher.
3. Videotaping each microteaching episode.
4. Providing individual verbal feedback for each pre-service teacher in Group A.
5. Preparing forms for written feedback with pre-service teachers in Group B.
6. Administering the feedback forms during the previewing of videotapes.

7. Arranging the stimulated recall interview for both the pre-service teacher and the independent interviewer.
8. Administering an evaluation questionnaire to all pre-service teachers.

Classroom Observation Phase (This involved training in the use of the observation instrument).

1. Observer training in and rating of Instrumental Instructional Behaviors.
2. Charting the on-going processes of the class using the classroom activity description (C.A.D.) chart.
3. Recording interaction techniques using the three minute observation (T.M.O.) manual.
4. Obtaining three hours of pre-treatment and three hours of post-treatment data for each pre-service teacher.
5. Rebriefing the coders between pre- and post-treatment.
6. Independent interviewer training on the observation system used.

Stimulated Recall Phase

1. Interview pilot.
2. Designing an interview system.
3. Arranging and audiotaping each experimental subject interview within 48-hours of the last microteaching session.
4. Collecting the audiotapes and analyzing the results.

Summary Section

The present study employs a quasi-experimental pre-post test design and a descriptive section. Two experimental groups and one control group were investigated in music classrooms using a pre-post treatment intervention method. Independent coders (trained observers) used an observation instrument which consisted among other things of thirty-one teaching behaviors. The pre- and post-test observation results were then analyzed and compared. The descriptive section of the study includes a stimulated recall analysis of the experimental subjects' thoughts which were concerned with behavior change and planning processes.

The operational procedures of the study consisted of a preparatory phase, a treatment phase, a classroom observation phase and a stimulated recall phase. The preparatory phase included selecting the subjects, conducting the interview pilot study, and training the observers (coders) and the interviewer. The treatment phase consisted of designing the observation instrument, structuring the treatment sessions, and organizing the stimulated recall procedure. The classroom observation phase included training the coders in music behaviors and a rebriefing of the instruments in the observation system. The stimulated recall phase consisted of conducting an interview pilot, designing the questions, organizing the interview and finally analyzing the data.

Analysis of Data

Overview

Data in this study came from two sources; one was gathered from observations of classroom behaviors, the other was gathered during the stimulated recall interviews. The first source produced quantitative data that were subjected to statistical analysis in an effort to understand the effects of modelling and feedback used in the treatment. As such the independent variable were the Melab observations and the modelled demonstrations of the treatment. The quantitative dependent variables included the behaviors, the classroom events, the various music classes, and verbal or written feedback. The qualitative (i.e., descriptive) data came from the experimental subjects' thought processes regarding behavior change and planning strategies. The dependent qualitative variables therefore included the stimulated recall information. Both the quantitative and qualitative data taken together, support the researcher's belief of a more comprehensive understanding of the effects of feedback for training in pre-service behaviors.

The qualitative data were analyzed under the planning phenomena of goals and purposes, instructional delivery system, instructional strategies, and content structure and sequence. The planning phenomena combined with the personal phenomena (obtained from questionnaires) yielded data concerning effects of goal setting and feedback.

Raw data for statistical analysis were the interval means for each teaching behavior, the number of minutes spent in each classroom event, and the number of interactions. These means were calculated for the control and experimental groups in each of the three contexts: full-rehearsal, sectionals and general music.

Pre-post test comparisons were then employed to determine whether significant differences occurred in the behaviors, the classroom events (drill, activities, and classroom management) and interactions.

Correlated scores which were subjected to t-tests were also conducted to ascertain the significance of differences between the CRT sample and the present researcher's pre-service sample.

Qualitative Data

The stimulated recall interviews yielded information about each subject's thought processes regarding behavior change and planning strategies. The manner of conducting and analyzing these interviews is discussed under three headings: interview pilot, the pre-service interviews, and the method of analysis.

Interview Pilot

Since the researcher administered the treatment procedures, it was deemed appropriate to use an independent interviewer whom it was necessary to train in interview techniques and in the operation of the equipment. This was done through an interviewer training program.

For the interviewer training, a junior high school band rehearsal was taped. The band was conducted by an outside pre-service teacher who was a student teacher in the Edmonton Catholic School System. The independent interviewer then conducted SRI's with this pre-service teacher which were recorded on audiotapes, transcribed into typed copies, analyzed, and reorganized under the following planning phenomena headings: goals and purposes, instructional delivery system, instructional strategies and sequence.

From the results of the interviewer training program, guidelines were developed for the collection of the final research data. As a process of interviewer training, the following guidelines were formulated:

1. Videotape viewing condition. It was found advantageous to conduct the interviews in private carrels.
2. Choice of audio-visual equipment. After testing a number of microphones, sound mixers, camera lenses and VTR's, those deemed most effective were chosen for use in the research study. During the SRI, the audiovisual equipment was operated by the interviewer rather than by the interviewee in order to free the latter for maximum concentration on recall.
3. Length of lesson taped. Since the teaching time for each microteaching mini-lesson was short (ten to fifteen minutes in length), it was necessary to tape the entire lesson.
4. Length of videotape viewed. Since the tapes were brief, it was decided to view them in their entirety in order to elicit a maximum of information about each subject.
5. Length of stimulated recall interview. It was concluded that the length of each SRI was 30 to 40 minutes.
6. Types of questions set by the interviewer. The initial interview with the outside pre-service teacher followed the guidelines proposed by Marland (1977). These question guidelines included questions which were to be open-ended to start the verbal exchange, probing (if the interviewee did not give reasons for his response),

and clarifying (if the interviewer was not certain of the relationship between the response and the stimulus point). For a more detailed statement of the guidelines, see Marland and Cooper's suggestion in Appendix H. Interviewees were encouraged to ask the interviewer to stop the videotape at any stimulus point they wished in order to share their thoughts with the interviewer. The interviewer always stressed that the study was non-evaluative and the audiotapes were completely confidential.

7. Choice of modes by the interviewer. It was found advantageous to sequence the suggested instructional behaviors for the study. Questions concerning music content and sequencing were asked during the interview. Although the questions were relatively open-ended, the recall was directed on the use of the behaviors, the effects of feedback, and the sequencing content. Open types of comments regarding feeling, beliefs and curriculum methods were not explored.

Pre-Service Interviews

The interview schedules were developed and tested by Marland (1977) and Cooper (1979). The SRI's goal was to explore the pre-service teachers' thoughts about instructional behaviors. These interview questions yielded information about the following planning processes: goals and purposes of the lesson, and instructional delivery system, strategies, content structure and sequence. The behaviors used were, of course, affected by the type of feedback given to each subject and the extent of his preparation. By investigating the behaviors used, the intents of the lesson, and the thoughts regarding planning, information was collected regarding the behavior changes for each experimental subject.

Method of Analysis

The interviews with the pre-service teachers yielded data about two types of phenomena: instructional and personal. Together, the two types of data provide a comprehensive basis for assessing the effects of feedback on planning processes.

Although lesson planning as a process was not a primary focus in the present study, such information was collected because the interview pilot study had demonstrated that most exhibited behaviors are intent based. Therefore, the interview questions focussed on intents. Such intents fell under the following areas of instructional planning processes: goals and purposes, instructional delivery system, instructional strategies, content structure and sequence.

Devising a type of content analysis for microteaching resulted in a different type of analysis system. Although Cooper (1979) and Marland (1977) had implemented a type of content analysis called SATIT and found it useful to describe teachers' information processing concerning interactive thoughts, the present researcher was unable to fully apply this type of content analysis. The constraints placed on obtaining information about behavior change and planning processes restricted utilizing all the categories of the SATIT system and resulted in using the following categories: decision-making, reflections, and self-evaluation, the latter category being added by the present researcher. Although not stated as a category, musical confidence is also discussed.

Therefore, information was collected from the pre-service teachers' interviews under the two headings of personal phenomena and planning phenomena. Information was obtained from both sources to ascertain the effects of feedback on the planning processes.

Planning Phenomena

In the stimulated recall interviews, the principle things explored were the intents of the lesson. The intents were represented by the planning processes of goals and intents, instructional strategies, instructional delivery system, content structure, and sequence. Information was collected pertaining to whether or not each of these processes was planned.

Also information for the planning phenomena was obtained from the coder's Melab observations. Pre- and post-tests determined the mean scores of the behaviors, the classroom events (drill, activities and classroom management), and interactions for each of the experimental subjects. These mean scores were organized under the same categories as the planning processes (e.g., goals and purposes, strategies, delivery system, etc.) obtained in the stimulated recall interviews. However, whereas the SRI's revealed information of the intents of the lesson, the Melab observation revealed information about the observed behaviors of the lesson. The behavioral information obtained from the Melab observations was categorized as follows:

1. The goals and purposes of the lesson were behaviors numbers four and five.

2. The instructional delivery system of the lesson was contained in four clusters of behaviors: content presentations (numbers seven and eight), beginning-of-the-lesson behaviors (three and twelve), criticism and praise (sixteen, seventeen, eighteen and thirty), and lesson clarity (twenty-three).
3. The instructional strategies in behaviors dealing with activities and demonstrations (numbers six, nine, ten and eleven).
4. The content structure and sequence behaviors in two clusters of behaviors: the end-of-the-lesson behaviors (numbers thirteen through fifteen) and generic behaviors (number twenty-one-smoothness and number twenty-two-momentum).

Investigation of the stimulated recall interviews (which yielded information concerning each subject's lesson intent), and the observed behaviors of subjects during Melab lessons, yielded insights which were the basis for conclusions regarding feedback effectiveness.

Personal Phenomena

In addition to both his intended and observed behaviors, it was deemed appropriate also to gather personal information about each subject. Information about each subject's musical and academic history was gathered using a background questionnaire (see Appendix Q). Personal information collected from the stimulated recall includes the following:

Decision-making: Decisions were of two types: those made prior to and those made during the teaching of a lesson. The former were planned and the latter were unplanned occurring either as a result of class interaction or spontaneously during the course of instruction.

Reflection: Subject reflections were represented by content and non-content lesson characteristics. The first were directly related to lesson tasks and the second focussed on various dimensions of the students' interactive processes.

Self-Evaluation: Most of the thoughts about self-evaluation were concerned with the subject's teaching behaviors. The types of awareness involved in this evaluation related to one's own performance, instructional strategies, lesson content, one's personality, appearance and general teaching style.

Effects of Goal Setting

The planning of goals involves the formulation of objectives, considering possible steps to be followed, preparing instructional materials, and arranging classroom events. Morine (1976) states that planning classroom interactions is also needed. Therefore data for goal setting for the present study are discussed in terms of planning for instructional behaviors needed for adequate academic engagement time, and substantial class interactions. Also the effect of the planning in terms of behavior effectiveness for each subject is discussed.

The first part of the data for goal setting presents the following results: the differences between each subject's pre- and post-test behavior scores, the time spent on drill, activities, and classroom management. This part is followed by the interaction mean scores (i.e., the number of product-or-process-questions) and the results of the interactive behaviors (numbers twenty-seven through thirty-one). Finally, the effectiveness of the behaviors as found recorded on each subject's Instructional Behavior Evaluation Form is presented.

The discussion of the results for goal setting centered around each subject's observed behavior effectiveness, their perceived behavior effectiveness and the subsequent affects on the classroom events. Discrepancies between the perceived effectiveness and the actual effectiveness of the behaviors and the results of the classroom events can be attributed to problems in goal setting in the problem finding stage.

> Yinger (1978) states that problem finding is the first step in planning. It is here that the general task is translated into a specific planning problem. The major process at work in this stage is a discovery process through which the problem finding occurs. This primarily involves interactions among the planning dilemma, teaching goal conceptions, knowledge, experience, and materials. (p. 27)

Effects of Feedback

The discussion for the effects of feedback was drawn in light of the following: each subject's perceived effectiveness of the treatment (Instructional Behavior Evaluation Form, Appendix P), the noted changes in teaching style behaviors, and the above results of goal setting. The conclusions based on the perceived and observed effectiveness of the treatment for each subject and the success of goal formulation were all used as a basis for concluding whether feedback had been beneficial for the subject.

Quantitative Data

The data collected for quantitative analysis were obtained from the various part of the classroom observation system: the classroom activity description (C.A.D.), the low inference coding items (T.M.O.) and the high inference behavior items. This observation system combined instruments used in previous studies and is aimed at the specific teacher behaviors identified in the review of the literature. The present section will briefly describe the types of data made available by the observation system and the manner in which they were analyzed.

The measurements utilized in the classroom observation instrument (i.e., classroom activity description [C.A.D.], three minute observation system [T.M.O.] and the high inference behaviors) are described under Research Instruments found in this chapter.

Although studies similar to the present one include pupil achievement scores for their analysis, the present study does not and, rather, uses academic learning time as the data for analysis.

Method of Analysis

Data analysis took place in two phases: (1) the computation of the mean scores for the behaviors, the classroom events and the interactions which were collected by the classroom observation system, and (2) the relating of this data to the research questions asked.

During the first phase, means comparison and correlated t-tests were computed using the following types of data (see Table 2).

Table 2

Data Collection

Test	Groups A, B & C	Contexts	Data
Means Comparisons	-Groups A, B & C (Tables 3-5) -Experimental Sample -Total Sample		
	High Inference behaviors with above groups in pre- and post results (Tables 3-5).		Data obtained from 31 Teaching Behaviors.
	Low Inference for above groups in both pre- and post results (Tables 3-5).		Data obtained from number of minutes spent in each classroom event (drill, activities, and classroom management).
	Frequency % for above groups in both pre- and post results (Tables 3-5).		Data obtained from % of process and product questions in relation to the total number of questions during interactions (T.M.O.).
	Identification of specific behaviors for groups (Tables 20-22).	Pre- and post-test differences for different contexts with total sample (Tables 14-18).	Data on behaviors, minutes of classroom management, and process-product interactions for each - general music, large rehearsal & sectionals.
T-Tests	Group A - pre- and post test matched comparisons (Tables 8 -9)		Data correlations for pre- and post-test of each behavior to product-process interactions & classroom events in Group A.
	Group B - pre- and post-test matched comparisons (Tables 10-11).		Same data as above except for Group B.
	Group C - pre- and post-test matched comparisons (Tables 12-13).		Same data as above except for Group C.
	CRT Sample with Groups A, B and C (Tables 24-29).		Data on 13 Generic Teaching Behaviors.

Means Comparison: These include interval means and frequency means; the former comparing pre- and post-test scores of behaviors, the latter, pre- and post-test interactions and the time spent on classroom events (drill, activities and classroom management). (The behavior means are then related to the interaction and classroom event time means). This analysis was computed in two stages; one for Groups A, B and C and the other for different contexts of sectionals, full-rehearsal and general music.

Correlated T-Tests: Two types of comparisons were calculated: one involving experimental groups and the other involving various music contexts - sectionals, full-rehearsal and general music. Pre- and post-test significant differences were calculated for the various contexts and groups in the behaviors, classroom events (drill, activities, and classroom management) and interactions.

The last thirteen behaviors common to the experimental groups and the CRT group were also compared.

Research Questions

The second phase of the data analysis involved relating the findings to the five research questions of this study. This takes place in the sections which follow and is preceded in each case by a discussion of the question being considered.

Question 1

The primary purpose of the study was to investigate the effects of microteaching, consisting of modelling and feedback, for training undergraduate music education students in a set of teaching behaviors. Within this context, question 1 asks:

> How did the experimental teachers differ from the control teachers in their use of the criterion behaviors and what were the effects of such differences on the classroom?

To pursue this purpose the students were assigned to three groups: Group A which received modelling and verbal feedback, Group B which received modelling and written feedback and Group C which received modelling only. These groups were compared on the thirty-one teaching behaviors, the three classroom events (drill, activities and classroom management) and interactions. The results are presented separately for each group and discussed.

Additional light is thrown on question one using the same data by computing significant differences for the behaviors, classroom events and interactions of each group. In addition pre- and post-behaviors were correlated with the classroom events and interactions and discussed in terms of their effectiveness.

Finally a discussion is presented which elaborates the effectiveness of modelling and feedback used in microteaching in terms of the academically engaged minutes for each group.

Question 2

Since the purpose of this question was to explore the appropriateness of the behaviors for secondary music classes, the present study used the pre- post test design to investigate the three music contexts of sectionals, full-rehearsal, and general music. Within this context, question 2 asks:

> What were the effects of the use of the criterion behaviors in different junior high music classrooms?

The mean differences were calculated for the combined scores from all three groups in the behaviors, the classroom events, and interactions in the different contexts of sectionals, general music and full-rehearsals.

However, since there was only a small sample selected for general music, the results and subsequent discussions are restricted.

The data are presented in two phases. One set of results presents the significant differences in the behaviors, classroom events and interactions for each group. The other set presents the academically engaged time for each context. The relationship of the behaviors, the classroom events and interactions is discussed in relation to the number of academically engaged minutes. Conclusions are then drawn as to the appropriateness of the behaviors for each context.

Question 3

Another purpose of the present study was to investigate the effects of types of feedback on the pre-service teachers' performance of teaching behaviors. Within this context, question 3 asks:

> What effect did the feedback modes have on the behavior means exhibited by the two experimental groups?

Two types of analysis were performed with the quantitative data. In order to investigate the differences in the behaviors for all the grops, mean comparisons were conducted. T-tests were conducted in order to investigate the relationship of the behaviors to the classroom events. The latter results are discussed in relation to the classroom engagement times.

In addition, a qualitative analysis regarding feedback was deemed necessary for each group. Descriptive analysis involved presenting the effects of feedback for each group. However, the effects of feedback for each subject are presented in Chapter V. In addition, information from the Instructional Behavior Evaluation Form was collected about each group's perception of the treatment and then discussed in relation to the effect of the feedback.

Question 4

Since there is some evidence available suggesting the teaching style behaviors are learned only by experience (c.f., modelling) the present researcher used the pre-post treatment design to investigate this fact. Within this context, question 4 asks:

> Do the behavior means of the in-service teaching behaviors differ significantly from those of the pre-service teachers?

Two mean score comparisons were conducted: the first compared the pre-test scores of the in-service teachers with the pre-test scores of the pre-service teachers on the thirteen common behaviors (numbers nineteen through thirty-one), while the second compared the pre-test scores of the in-service teachers with the post-test scores of the pre-service teachers. The first set of results demonstrates the significant differences between the groups before testing while the second demonstrates the significant differences of the researcher's group after treatment. Differences can then be attributed to the treatment (i.e., modelling).

Conclusions are presented in light of the planning behaviors (numbers one through eighteen -- Appendix E) and the effectiveness of feedback is presented for each group and discussed separately.

Question 5

Since the effects of the feedback were important to the present study, stimulated recall interviews were conducted with the subjects of Groups A and B which received verbal and written feedback respectively. Information was gathered in four areas: personal phenomena, planning phenomena, effects of goal setting and effects of feedback. The analysis was generally concerened with discovering the similarities which appeared when comparing the thoughts of the two experimental groups and how feedback influenced the subject's lesson planning. Specifically question 5 asks:

> How did each type of feedback affect each subject?

Reliability Tests

Reliability checks were conducted for behavior perceptions and the equality of the feedback administered to each subject. Both were used to check the reliability of the feedback given during treatment as outlined below.

The first test examined the reliability of the present researcher's perception of the treatment behaviors. Behaviors of both the teacher and the student were coded using the "Quest" observation system (see Appendix F). An independent judge and the present researcher coded the thirty-one teaching behaviors used by an outside subject teaching a Melab lesson. In similar studies, Evertson and Brophy (1976) claimed that a reliability agreement of 80% was acceptable.

The reliability for the behaviors was calculated using the intercoder agreement format which was highly recommended by Holsti (1969). Since the behavior interval scale was based on a Likert scale 1-5, it was decided to use the rules for minimal categories. That is, perfect agreement is assigned the coefficient of 1.0, disagreement one step removed assigned 0.5, and disagreements two or more steps removed assigned 0 in assessing the reliability of each behavior. The sums of the coefficients are then divided by the total of the behaviors (for the present study 31) and the results indicate the reliability agreement.

The results indicate that all but nine of the behaviors had perfect agreement (a coefficient of 1). Eight of these (behaviors number four, seven, fourteen, fifteen, nineteen, twenty-two, twenty-seven and thirty) had coefficients of .5 and one had the coefficient of 0 (behavior number eight). The total sum of the agreement was 26/31 or 84%. Therefore, it is evident from the result that the researcher's perception of the thirty-one behaviors was reliable.

The other type of reliability check was administered during the verbal feedback stage of the study. Tapes of the first feedback sessions for each subject were replayed and analyzed to ascertain feedback equality. Another independent judge checked the use of the researcher's number of supportive or non-supportive comments given to the subjects, the time given for each session, and the quality of the content. The results indicated that an equal amount of support, time and content quality was administered to each subject. Since all feedback was comparatively equal, it is possible to conclude no special favoritism or guidance was given to any of the subjects.

CHAPTER IV

QUANTITATIVE RESULTS

Introduction

The following chapter presents the results of the study and relates them to the research questions. The data were collected and analyzed in order to answer the following questions:

1. How did the experimental teachers differ from the control teachers in their use of the criterion behaviors and what were the effects of such differences on the classroom?
2. What were the effects of the use of the criterion behaviors in different junior high music classrooms?
3. What effect did the feedback modes have on the behavior means exhibited by the two experimental groups?
4. Do the behavior means of the in-service teaching behaviors differ significantly from those of the pre-service teachers?
5. How did each type of feedback affect each subject?

The results relevant to each question will be presented and discussed separately. The results for questions 1-4 will be presented in Chapter IV and for question 5 in Chapter V.

Question 1

One of the main purposes of the study and this question was to compare the effects of modelling and feedback for training undergraduate music education students in a set of teaching behaviors. Within this context, question 1 asks:

> How did the experimental teachers differ from the control teachers in their use of the criterion behaviors and what were the effects of such differences on the classroom?

To investigate the effects of modelling (i.e., the independent variable), two experimental groups and a control group were compared using a pre-post test design. While the two experimental groups were assigned to feedback modes (Group A - verbal feedback and Group B - written feedback), the treatment (i.e., modelling) was held constant for all groups. The analysis for modelling included comparing the pre-post test means of the thirty-one behaviors, the amount of time spent on the three classroom events (drill, activities, and classroom management) and the number of interactions. The results for the pre- and post-tests are presented separately for each group and discussed.

Additional light is thrown on question 1 by investigating the effects of feedback and computing significant differences for the behaviors, classroom events and interactions of each group. Significant behavior differences which were found are also presented and discussed in terms of their effect on classroom events and interactions. These experimental results are presented in Tables 3, 4 and 5.

The effects of modelling obtained from the comparison of the pre- and post-test are also discussed in terms to the academically engaged minutes for each group.

Results

The results for each group will be discussed in the findings of the behaviors, the classroom events and the interactions.

There were a number of differences in the thirty-one behaviors for each of the groups. In Group A there were eleven behaviors which were significantly different between the pre- and post-tests. Since many of the pre-post test behaviors showed substantial differences, non-significant improvement was noted on twenty-four behaviors for Group A. For a more complete description of the behavior changes see Appendix K. In Group B, there was only one significant difference. Even though there was non-significant improvement on fourteen behaviors, seventeen showed decreases. In Group C, only two significant differences appear and non-significant increases were noted on seventeen behaviors.

In discussing classroom events, the time spent on classroom management for all groups decreased. In Group A, however, there was an increase in the time spent on drill and activities; in Group B only an increase in drill was noted and a decrease on activities; and Group C, similar to Group B, spent more time on drill and less time on activities.

In the findings for interactions, Groups A, B and C decreased their use of process questions and increased their use of product questions. All groups asked the same number of questions in the post-test.

Discussion

The first part of the discussion reveals information concerning the modelling effects and the findings are presented in terms of the academically engaged minutes.

As expected, Group A, which received verbal feedback and modelling obtained substantially more significant and non-significant behavior gains and as such performed better than Group B which received written feedback and modelling or Group C (control) which received modelling and no feedback.

TABLE 3

Comparison of Pre- and Post-Test Differences for Group A

Items	Cases	Pre-Test			Cases	Post-Test			Level of Probability
Behaviors	N	$\overline{X}$	S.D.	Error	N	$\overline{X}$	S.D.	Error	Significance
1.	9	2.66	1.23	.23	12	4.00	.85	.25	*.05
2.	9	2.75	1.49	.53	12	4.18	.87	.26	.08
3.	9	1.66	.82	.33	12	3.44	1.13	.38	*.02
4.	9	2.28	1.38	.52	12	3.60	.70	.22	*.04
5.	9	3.66	.58	.33	12	3.37	1.50	.53	*.04
6.	9	3.50	1.38	.56	12	3.55	1.51	.50	.31
7.	9	2.25	1.04	.37	12	4.08	1.31	.38	*.01
8.	9	3.42	.79	.30	12	4.16	.57	.16	*.05
9.	9	3.50	1.38	.56	12	4.00	1.13	.33	.56
10.	9	3.33	1.50	.50	12	4.50	.52	.15	.13
11.	9	3.62	.744	.26	12	3.91	.97	.29	.10
12.	9	3.00	1.195	.42	12	4.00	1.41	.50	.22
13.	9	2.00	1.23	.55	12	3.37	1.50	.53	.21
14.	9	3.66	.58	.33	12	3.92	1.08	.31	.39
15.	9	3.25	.39	.49	12	4.00	1.15	.37	*.02
16.	9	3.40	1.81	.81	12	3.90	.30	.09	.42
17.	9	3.00	1.22	.55	12	4.44	.53	.18	.09
18.	9	2.60	1.34	.60	12	4.11	.60	.20	*.04
19.	9	3.37	1.60	.57	12	4.27	.91	.27	.14
20.	9	3.00	1.41	.54	12	4.50	1.07	.38	.11
21.	9	3.38	.92	.32	12	4.54	.52	.16	*.02
22.	9	3.22	.97	.32	12	4.58	.52	.15	*.04
23.	9	3.11	1.05	.35	12	4.41	.67	.19	.06
24.	9	3.37	1.41	.50	12	4.33	.49	.14	.06
25.	9	3.60	1.41	.50	12	4.00	.17	.60	.31
26.	9	3.00	1.55	.63	12	4.20	.79	.25	*.04
27.	9	--	--	--	12	3.10	1.20	.38	--
28.	9	--	--	--	12	3.50	1.20	.42	--
29.	9	3.33	.33	.82	12	3.83	.84	.24	.21
30.	9	--	--	--	12	4.00	.44	.14	--
31.	9	--	--	--	12	4.00	.76	.27	--
Classroom Events		$\overline{X}$	S.D.	S.E.		$\overline{X}$	S.D.	S.F.	
Drill		19.11	5.69	1.80		24.08	10.36	2.99	.72
Activities		9.00	5.83	1.94		15.41	12.44	3.59	.66
Classroom Management		6.88	6.60	2.20		3.58	2.48	.70	.22
Interactions		N	Relative Frequency			N	Relative Frequency		
Product		21	27%			35	38%		.62
Process		23	29.9%			9	9.8%		.28

* - Indicates Significance level of .05 or less.

TABLE 4

Comparison of Pre- and Post-Test Differences for Group B

Items	Cases	Pre-Test			Cases	Post-Test			Level of Probability
Behaviors	N	$\overline{X}$	S.D.	S.E.	N	$\overline{X}$	S.D.	S.E.	
1.	9	3.00	1.69	.60	9	2.55	1.13	.38	.75
2.	9	2.87	1.55	.55	9	2.50	1.31	.46	.42
3.	9	2.33	1.00	.33	9	3.60	1.51	.68	.14
4.	9	3.62	.92	.32	9	3.28	1.60	.61	.86
5.	9	3.37	1.64	.55	9	2.50	1.38	.56	1.00
6.	9	3.44	1.33	.44	9	3.40	1.52	.68	1.00
7.	9	3.11	1.05	.35	9	3.66	.71	.24	.25
8.	9	3.44	.53	.18	9	3.77	.83	.28	.29
9.	9	2.55	1.33	.44	9	3.75	1.17	.41	.09
10.	9	3.88	1.27	.42	9	3.11	1.27	.42	.16
11.	9	3.12	.99	.35	9	4.12	.64	.22	.10
12.	9	3.11	.93	.31	9	3.28	1.38	.52	.52
13.	9	3.38	1.36	.48	9	3.57	1.81	.68	.75
14.	9	3.00	1.29	.49	9	3.66	1.12	.37	.36
15.	9	3.22	1.48	.49	9	3.50	1.41	.50	.77
16.	9	2.12	1.24	.44	9	2.66	1.51	.61	.50
17.	9	2.62	1.60	.57	9	2.16	1.17	.48	.53
18.	9	2.75	1.67	.59	9	2.00	1.16	.44	.33
19.	9	3.77	1.30	.43	9	2.77	1.20	.40	.06
20.	9	3.22	1.48	.49	9	2.75	1.17	.41	.31
21.	9	4.11	.93	.31	9	3.00	1.29	.49	*.02
22.	9	3.88	1.36	.45	9	3.00	1.22	.41	
23.	9	3.88	1.36	.45	9	4.00	.71	.24	.08
24.	9	3.66	1.00	.33	9	2.88	1.45	.48	.79
25.	9	3.25	1.03	.37	9	3.55	.88	.29	.77
26.	9	3.28	1.38	.52	9	3.33	1.36	.56	.69
27.	0		--	--	9	2.50	1.23	.50	--
28.	0		--	--	9	2.66	.82	.33	--
29.	9	2.62	1.06	.38	9	4.00	.71	.32	.79
30.	0		--	--	9	3.00	1.16	.58	--
31.	0		--	--	9	3.66	.52	.21	--

Classroom Events	$\overline{X}$	S.D.	S.E.	$\overline{X}$	S.D.	S.E.	
Drill	17.22	8.96	2.99	21.70	7.13	2.26	.17
Activities	15.44	5.83	1.94	12.40	8.88	2.81	.28
Classroom Management	9.00	8.97	2.99	5.10	4.12	1.30	.24

Interactions	N	Relative Frequency	N	Relative Frequency	
Process	16	21%	9	13.8%	.23
Product	35	47%	39	60%	.90

* - Indicates Significance level of .05 or less.

TABLE 5

Comparison of Pre- and Post-Test Differences for Group C

Items	Cases	Pre-Test			Cases	Post-Test			Level of Probability
Behaviors	N	$\overline{X}$	S.D.	S.E.	N	$\overline{X}$	S.D.	S.E.	
1.	20	3.73	1.15	.26	17	3.18	1.28	.32	*.05
2.	20	3.46	1.19	.31	17	3.18	1.28	.32	.44
3.	20	2.38	1.12	.31	17	3.15	1.57	.44	.29
4.	20	3.00	1.36	.36	17	3.35	1.34	.36	.74
5.	20	2.33	1.49	.47	17	3.22	1.48	.49	.20
6.	20	2.81	1.38	.34	17	3.64	1.15	.31	.13
7.	20	3.13	.99	.26	17	3.57	1.09	.29	.35
8.	20	3.23	.97	.24	17	4.00	.38	.10	*.00
9.	20	2.76	1.17	.32	17	3.28	1.14	.30	.38
10.	20	3.50	1.05	.24	17	3.58	1.06	.26	.62
11.	20	3.80	.70	.16	17	4.13	.52	.13	.30
12.	20	3.15	.99	.22	17	3.13	1.69	.44	.66
13.	20	2.10	1.52	.48	17	2.50	1.57	.45	--
14.	20	3.40	1.08	.34	17	3.31	1.35	.34	.86
15.	20	3.26	.96	.25	17	3.25	1.48	.37	
16.	20	3.61	.77	.21	17	4.00	.82	.23	.20
17.	20	3.70	1.06	.34	17	3.43	1.21	.30	.28
18.	20	3.50	.91	.26	17	2.87	1.51	.39	.13
19.	20	3.50	1.10	.25	17	3.58	1.23	.30	.56
20.	20	3.35	1.34	.36	17	3.28	1.06	.29	.54
21.	20	3.77	.94	.22	17	3.86	.99	.26	.74
22.	20	3.20	1.20	.27	17	3.87	1.09	.27	.08
23.	20	3.85	.75	.17	17	3.73	1.10	.28	.72
24.	20	3.47	1.07	.25	17	3.70	1.11	.27	.56
25.	20	3.55	183	.19	17	3.93	.77	.19	.49
26.	20	3.75	.62	.18	17	3.75	.62	.18	.61
27.	0	--	--	--	17	3.83	1.17	.48	--
28.	0	--	--	--	17	3.20	1.30	.58	--
29.	20	3.33	.98	.25	17	3.40	1.27	.40	1.00
30.	0	--	--	--	17	4.00	.50	.17	--
31.	0	--	--	--	17	3.45	1.44	.43	--

Classroom Events	$\overline{X}$	S.D.	S.E.	$\overline{X}$	S.D.	S.E.	
Drill	20.90	12.41	2.78	22.05	8.93	2.17	.38
Instructional Activities	14.35	9.91	2.22	9.17	7.44	1.80	.52
Classroom Management	9.00	5.91	1.32	5.23	6.22	1.50	.18

Interaction	N	Relative Frequency	N	Relative Frequency	
Process	29	12%	4	5.5%	.24
Product	135	56%	42	57.5%	.18

* - Indicates Significance level of .05 or less.

Since McDonald and Allen (1967), Koran (1968), Langer (1969) and Alper et al. (1972) found that viewing an appropriate modelling procedure of teaching behaviors leads the viewer to the acquisition of those behaviors, the non-significant increases in Group C are probably attributed to the modelling procedure used in the treatment. This resulted in the advantageous decrease of time spent in classroom management, and a corresponding increase in drill time.

The academically engaged time increased from 79% to 84% which was not significant for Group C (see Table 6).

The latter part of the discussion reveals information concerning the feedback effects and the findings are presented in terms of the academically engaged minutes.

Groups A and B which received feedback (and modelling) obtained the following results. Group A had a larger increase than the other groups in the percentage of academically engaged minutes (an increase of 13%), which was reflected in Group A's increase in both drill and activity time compared to Group B (and Group C) which increased only their drill time. Although the engagement times of each group were similar in the beginning, the written feedback received by Group B resulted only in slight gains for them. The results of the effects of feedback will be discussed in greater detail under question 3 and in Chapter V.

TABLE 6

Average Engaged and Allotted Minutes per Group in Music for Melab Classes

Group	Test	Engaged Min.	Allotted Min.	Engagement %
A	pre	28	35	80%
	post	39	42	93%
B	pre	32	41	78%
	post	33	38	87%
C	pre	34	43	79%
	post	31	37	84%

Question 2

The Melab observation took place in three contexts of music teaching (sectionals, full-rehearsals and general music). The purpose of this question was to explore the effectiveness of the behaviors for junior high music classes. Within this context, question 2 asks:

> What were the effects of the use of the criterion behaviors in different junior high classrooms?

The mean score differences were calculated for the combined scores from all three groups in the behaviors, the classroom events, and interactions in the different contexts of sectionals, general music and full-rehearsals. However, since there was only a small sample selected for general music, the subsequent results and discussions are very limited.

The data are presented in two phases. One set of results presents the significant differences in the behaviors, classroom events and interactions for each group. In addition, the correlation of the behaviors to the classroom events and interactions is presented for Groups A, B and C in Tables 8, 9, 10, 11, 12 and 13. The other set of results presents the differences of behaviors, classroom events and interactions for different contexts. Tables 14, 15, 16, 17 and 18 present both non-significant and significant differences for these contexts; sectionals, full-rehearsals and general music. Finally, the discussion of these results is presented in relation to the academically engaged minutes for each context (see Table 7, page 115). Conclusions were then drawn as to the results of the behaviors in the groups and in different contexts.

The results and discussions for the groups will be presented followed by the results and discussions for the contexts.

Group Results

From the results presented in Table 3 significant differences for Group A were found in eleven behaviors: 1, 3, 4, 5, 7, 8, 15, 18, 21, 22 and 26. From the Summary Table in Appendix L, column 3, it is evident that the use of these behaviors was accompanied by the greater differences in process questions for Group A.

From Group B, significant pre-post differences were found in only behavior number 12 (see Table 4). From the Summary Table in Appendix L, column 3, it is evident that this behavior produced the greatest differences in both product and process questioning and classroom management.

For Group C, significant pre-post differences were found in two behaviors, numbers 1 and 8 (see Table 5). From the Summary Table in Appendix L, column 3, it is evident that these two behaviors produced the greatest differences in the time spent on drill, activities and process questioning.

Group Discussion

This section will discuss the effectiveness of the teaching behavior for junior high music classes and their effects on classroom events.

Rosenshine's review (1979) refers to direct instruction as being academically focussed, teacher-directed, and as using sequenced material. Since there has been little research in music with this model, the present study investigates its use and effect in various music settings (i.e., sectionals, full-rehearsals and general music). The behaviors center around moving the students through a sequenced set of materials or tasks. The behavior means for each group are discussed in relation to the academically engaged times (c.f., student achievement gains).

The differences in questioning and classroom events will be discussed in relation to significant differences of the behaviors. This will be followed by a discussion of the academically engaged times for each group.

The greatest behavior differences on the classroom events were in interactions as expected. All groups exhibited large differences in the past correlation between the behaviors and the product, process questions or both. It seems that when there is an effective use of the behaviors there are fewer resulting process questions as evidenced by Group A scores. However, the results in this area are ambiguous since Groups B and C scores do not necessarily support this finding. This could have been due to the coder's inability to accurately record the questions asked in the classroom or to problems involved in the analysis.

Another expected finding was concerned with classroom events. It is evident that when both instructional activities and drill are used in the classroom, the student remains on task longer. Evidence indicates that Group A which increased both the activity and drill time also had the greatest increase in academically engaged time. It can be concluded therefore, that even though drill is desirable in music classes, instructional activities are also recommended especially in general music.

The results for the academically engaged time were at least 78% of the total class time for the group's pre-test and at least 84% for the group's post-test. It was also found that the higher the means scores for direct instruction behaviors, the higher the academic engagement time. These findings suggest that this direct instructional

TABLE 7

Average Percentage of Engaged Time for Total Sample in Music in Melab Classes

Context	Pre-Test %	Post-Test %	Difference
Sectionals	82%	78%	-4%
Full Rehearsal	82%	81%	-1%
General Music	67%	72%	+5%

TABLE 8

Pre-Test Correlations of Behaviors with Classroom Events for Group A

Behavior Number	Cases	CLASSROOM EVENTS				
Behaviors	N	Drill	Activities	Classroom Management	Product	Process
1	8	.25	.67	.57	.52	.08
2	8	.14	.15	.45	.62*	.34
3	6	.76*	.25	.25	.68	.82*
4	6	.68	.04	.45	.37	.47
5	3	.11	.93	.89	.95	.99*
6	7	.71*	.32	.38	.33	.47
7	8	.12	.26	.61*	.23	.52
8	7	.10	.48	.03	.34	.38
9	7	.08	.67*	.73*	.42	.45
10	8	.24	.22	.29	.65*	.53
11	8	.34	.05	.15	.21	.23
12	8	.11	.01	.53	.52	.73*
13	5	.53	.68	.65	.19	.96*
14	4	.18	.49	.42	.42	.51
15	8	.52	.22	.24	.67	.73*
16	6	.33	.22	.27	.34	.45
17	5	.84*	.15	.09	.43	.65
18	5	.55	.29	.35	.77	.79*
19	8	.07	.15	.38	.44	.60*
20	8	.06	.27	.30	.65*	.65*
21	7	.60	.04	.13	.24	.87*
22	8	.34	.15	.21	.76*	.59
23	8	.23	.23	.76*	.47	.28
24	7	.13	.07	.04	.57	.77*
25	7	.63	.29	.13	.19	.94*
26	6	.17	.33	.39	.48	.42
27	0	--	--	--	--	--
28	0	--	--	--	--	--
29	4	.23	.43	.48	.67	.43
30	0	--	--	--	--	--
31	0	--	--	--	--	--

* - Indicates Significance level of .05 or less.

Note: All correlations presented are Pearson product-moment coefficients.

TABLE 9

Post-Test Correlations of Behaviors with Classroom Events for Group A

Behavior Number	Cases	CLASSROOM EVENTS				
Behaviors	N	Drill	Activities	Classroom Management	Product	Process
1	8	.64*	.33	.36	.15	.73*
2	7	.46	.23	.37	.54	.47
3	5	.13	.68	.44	.63	.53
4	7	.18	.50	.36	.66*	.31
5	6	.56	.43	.19	.77*	.06
6	6	.70	.34	.26	.80*	.15
7	8	.13	.43	.27	.25	.40
8	8	.51	.01	.07	.71*	.07
9	8	.02	.27	.55	.38	.53
10	8	.22	.18	.53	.61*	.20
11	8	.24	.07	.18	.25	.09
12	4	.22	.49	.98*	.57	.66
13	5	.30	.32	.58	.49	.34
14	8	.01	.48	.01	.34	.08
15	6	.38	.52	.12	.23	.05
16	8	.22	.35	.21	.25	.22
17	7	.15	.37	.21	.19	.09
18	7	.09	.88*	.61	.03	.14
19	8	.23	.65*	.23	.16	.65*
20	6	.23	.47	.32	.31	.31
21	8	.04	.55	.32	.26	.44
22	8	.13	.47	.12	.61*	.34
23	8	.09	.46	.34	.06	.44
24	8	.37	.81*	.12	.34	.84*
25	8	.09	.30	.36	.11	.74*
26	7	.28	.14	.30	.59	.37
27	7	.22	.75*	.70*	.37	.01
28	6	.28	.32	.06	.33	.62
29	8	.46	.37	.02	.58	.74*
30	8	.20	.10	.36	.34	.09
31	5	.49	.20	.31	.87*	.76

* - Indicates Significance level of .05 or less.

Note: All correlations presented are Pearson product-moment coefficients.

TABLE 10

Pre-Test Correlations of Behaviors with Classroom Events for Group B

Behavior Number	Cases	CLASSROOM EVENTS				
Behaviors	N	Drill	Activities	Classroom Management	Product	Process
1	7	.34	.07	.48	.60	.16
2	7	.42	.03	.52	.66*	.10
3	8	.55	.11	.70*	.71*	.23
4	7	.46	.08	.20	.64	.18
5	8	.55	.12	.53	.78*	.05
6	8	.53	.16	.69*	.61*	.09
7	8	.27	.25	.62*	.12	.07
8	8	.12	.34	.51	.22	.24
9	8	.76*	.04	.43	.59	.39
10	8	.56	.28	.79*	.47	.08
11	7	.61	.42	.37	.36	.23
12	8	.56	.37	.73*	.19	.26
13	7	.49	.08	.70*	.82*	.05
14	6	.30	.53	.56	.30	.02
15	8	.68*	.06	.57	.76*	.17
16	7	.13	.21	.41	.50	.36
17	7	.42	.18	.52	.76*	.08
18	7	.34	.01	.50	.68	.17
19	8	.51	.35	.33	.81*	.15
20	8	.76*	.13	.59	.84*	.26
21	8	.35	.26	.85*	.44	.09
22	8	.56	.16	.85*	.67*	.04
23	8	.54	.33	.82*	.53	.05
24	8	.48	.05	.68*	.67*	.11
25	7	.70*	.28	.51	.57	.15
26	6	.59	.46	.67	.73*	.17
27	0	--	--	--	--	--
28	0	--	--	--	--	--
29	7	.44	.42	.65*	.46	.05
30	0	--	--	--	--	--
31	0	--	--	--	--	--

* - Indicates Significance level of .05 or less.

Note: All correlations presented are Pearson product-moment coefficients.

TABLE 11

Post-Test Correlations of Behaviors with Classroom Events for Group B

Behavior Number	Cases	CLASSROOM EVENTS				
Behaviors	N	Drill	Activities	Classroom Management	Product	Process
1	8	.08	.09	.17	.58	.64*
2	7	.39	.07	.27	.42	.56
3	5	.28	.19	.57	.70	.96*
4	7	.01	.24	.04	.78*	.76*
5	6	.40	.21	.21	.52	.53
6	6	.04	.27	.22	.74*	.86*
7	8	.29	.58	.13	.57	.93*
8	8	.02	.08	.02	.39	.17
9	7	.66*	.87*	.05	.68*	.51
10	8	.21	.38	.07	.24	.48
11	7	.07	.46	.37	.08	.07
12	8	.17	.01	.16	.37	.65*
13	7	.20	.09	.05	.16	.53
14	8	.12	.14	.35	.41	.59
15	7	.11	.45	.33	.47	.59
16	6	.05	.08	.82*	.06	.39
17	6	.57	.04	.00	.27	.77*
18	7	.33	.05	.07	.29	.59
19	8	.14	.25	.06	.21	.63*
20	8	.08	.30	.23	.21	.29
21	7	.10	.38	.09	.18	.53
22	8	.04	.29	.23	.01	.41
23	8	.11	.28	.10	.07	.36
24	8	.12	.01	.11	.02	.71*
25	8	.48	.25	.32	.16	.42
26	5	.82*	.21	.75	.52	.92*
27	6	.41	.34	.19	.28	.60
28	6	.50	.13	.23	.22	.40
29	5	.50	.43	.47	.88*	.28
30	5	.56	.66	.63	.57	.56
31	5	.19	.40	.18	.50	.38

* - Indicates Significance level of .05 or less.

Note: All correlations presented are Pearson product-moment coefficients.

TABLE 12

Pre-Test Correlations of Behaviors with Classroom Events for Group C

Behavior Number	Cases	CLASSROOM EVENTS				
Behaviors	N	Drill	Activities	Classroom Management	Product	Process
1	14	.12	.12	.33	.36	.00
2	11	.21	.33	.57*	.25	.44
3	10	.06	.38	.30	.14	.00
4	10	.15	.18	.47	.04	.16
5	7	.05	.50	.03	.28	.91*
6	12	.39	.30	.14	.62*	.10
7	10	.18	.21	.26	.02	.32
8	12	.20	.24	.42	.31	.29
9	9	.09	.45	.21	.04	.05
10	15	.05	.18	.13	.31	.34
11	15	.24	.01	.14	.28	.19
12	15	.07	.10	.23	.42*	.02
13	5	.77	.77	.19	.09	.25
14	8	.30	.03	.37	.25	.34
15	12	.25	.05	.17	.37	.08
16	10	.06	.05	.23	.21	.61*
17	8	.01	.14	.84*	.19	.46
18	10	.21	.18	.37	.54*	.10
19	15	.04	.06	.12	.25	.30
20	11	.27	.09	.37	.08	.24
21	13	.03	.05	.02	.33	.16
22	15	.10	.07	.09	.26	.42
23	15	.49	.13	.23	.04*	.25
24	15	.14	.05	.01	.13	.30
25	15	.24	.06	.01	.08	.08
26	9	.17	.08*	.58*	.69*	.74*
27	0	--	--	--	--	--
28	0	--	--	--	--	--
29	13	.44	.21	.23	.39	.10
30	0	--	--	--	--	--
31	0	--	--	--	--	--

* - Indicates Significance level of .05 or less.

Note: All correlations presented are Pearson product-moment coefficients.

TABLE 13

Post-Test Correlations of Behaviors with Classroom Events for Group C

Behavior Number	Cases	CLASSROOM EVENTS				
Behaviors	N	Drill	Activities	Classroom Management	Product	Process
1	14	.50*	.14	.10	.67*	.48*
2	14	.49*	.25	.20	.65*	.47*
3	11	.17	.68*	.02	.49	.56*
4	12	.24	.58*	.29	.39	.55*
5	7	.08	.68*	.61	.13	.62
6	7	.12	.48*	.33	.28	.51*
7	12	.13	.41	.03	.30	.57*
8	13	.48*	.45	.18	.10	.05
9	12	.39	.51*	.53*	.34	.49*
10	15	.52*	.28	.64*	.43*	.49*
11	13	.63*	.46*	.44	.20	.18
12	14	.16	.10	.40	.38	.46*
13	10	.14	.11	.45	.09	.50
14	14	.00	.12	.16	.02	.38
15	14	.45*	.04	.18	.23	.38
16	12	.36	.57*	.00	.54*	.47
17	14	.36	.38	.31	.61*	.52*
18	13	.44	.14	.36	.27	.47*
19	15	.43*	.22	.25	.63*	.58*
20	13	.17	.61*	.19	.54*	.52*
21	14	.38	.14	.43	.36	.43
22	14	.37	.08	.47*	.22	.35
23	13	.44	.01	.36	.33	.44
24	15	.54*	.24	.52*	.25	.42
25	14	.39	.01	.46*	.24	.46*
26	11	.22	.38	.38	.03	.06
27	5	.10	.81*	.85*	.46	.58
28	5	.25	.36	.25	.22	.91*
29	9	.05	.18	.40	.38	.31
30	9	.45	.16	.17	.41	.00
31	11	.32	.15	.15	.30	.19

* - Indicates Significance level of .05 or less.

Note: All correlations presented are Pearson product-moment coefficients.

model which produced significant differences in similar studies dealing with elementary mathematics and reading classes (i.e., the Texas teacher effectiveness studies of 1976-78) is also effective for junior high school classes.

Context Results

This section is divided into two sub-sections; firstly the use of the behaviors in sectionals and full-rehearsals; and secondly, the classroom event times for each of these music contexts will be discussed. In addition, the limited results for general music classes will be presented and discussed.

Sectionals: From Table 17, only one significant difference appears for the sectionals when comparing the pre- and post-test behavioral scores. Also noteworthy are the non-significant changes which include fourteen increases and twelve decreases.

The academically engaged times for the pre- and post-test were 82% and 78% respectively. Although this indicates a drop of 4%, this is not significant. Because of the high amount of engagement time for both tests, it seems probable that the behaviors made little difference in sectional classes. However, since there was a decrease in twelve behavioral scores it would appear that the behaviors are less effective for small groups than for larger groups (full-rehearsals) where no substantial decreases occurred.

Full-Rehearsals: From Table 18, seven significant behavior differences are noted when comparing the pre- and post-test scores. However, scores on twenty-six behaviors increased non-significantly and one decreased.

The pre-post engagement times were similar (X = 81.5%); however, all but one of the behaviors showed increases. It is evident from these findings that the behaviors using direct instruction principles are especially effective for full-rehearsal in junior high school classes. Although a similar finding was presented for general music classes which also contained a large number of students, this was not so in sectionals where a small number of students were taught. It would then appear that the direct instruction behaviors are more effective for full-rehearsal and general music classes (i.e., large numbers) than for sectionals (i.e., small numbers).

General Music: Significant differences for general music were not calculated since the number of cases available was below five. However, twenty non-significant behaviors increased and only five decreased.

Even though there was a small number of general music classrooms observed, a number of findings are noteworthy. The academic engagement time substantially increased in the observed general music classes and there were twenty behavior ratings which showed substantial increases. Because both the academic engagement times and behavior ratings showed increases, it may be concluded that direct instruction behaviors are also effective for junior high general music classes.

Context Discussion

The above findings show the music settings which produce the greatest engagement time. This section will discuss how the classroom event times were distributed in each of the settings.

Drill: At least half the time was spent on drill in all the music contexts. These results are in accordance with Rosenshine's (1979) recommendation that at least half the available teaching time should be devoted to drill. In addition the findings indicate that even in sectionals and general music classes, a quarter of the time is also spent on activities.

Classroom Management: A consistent improvement in all contexts was the expenditure of less time on classroom management which resulted from increased drill time.

TABLE 14

Sectional Comparison of Pre-and Post-Test Differences for Total Sample

Item	Pre-Test			Post-Test		
Behaviors	$\overline{X}$	S.D.	S.E.	$\overline{X}$	S.D.	S.E.
1	3.69	1.32	.37	3.18	1.38	.34
2	3.54	1.29	.39	3.20	1.37	.35
3	2.50	.97	.31	3.50	1.43	.45
4	3.63	1.21	.36	3.64	1.15	.31
5	3.22	1.56	.52	3.50	1.58	.50
6	3.57	1.51	.40	3.84	1.07	.30
7	3.15	1.14	.32	3.81	1.11	.28
8	3.46	.88	.24	3.93	.26	.07
9	3.18	1.40	.42	3.80	1.21	.31
10	3.86	1.36	.35	3.81	1.17	.29
11	3.73	.70	.18	4.13	.35	.09
12	3.06	1.22	.32	2.19	1.78	.51
13	2.77	1.30	.43	2.36	1.57	.47
14	3.55	1.01	.33	3.43	1.41	.35
15	3.84	.90	.25	3.20	1.37	.36
16	3.63	1.03	.31	3.73	1.03	.27
17	3.75	1.04	.37	3.35	1.39	.37
18	3.44	1.13	.38	2.76	1.59	.44
19	3.60	1.45	.38	3.56	1.46	.37
20	3.25	1.60	.46	3.58	1.31	.38
21	4.00	.78	.21	3.80	1.27	.33
22	3.53	1.25	.32	3.81	1.38	.34
23	3.73	1.03	.27	4.06	.98	.23
24	3.71	1.14	.30	3.56	1.32	.33
25	3.80	.94	.24	4.00	.73	.18
26	3.50	.71	.2	3.76	1.09	.30
27	0	--	--	3.50	1.35	.43
28	0	--	--	3.62	1.19	.42
29	3.46	.97	.28	3.45	1.21	.37
30	0	--	--	3.70	.68	.21
31	0	--	--	3.80	.79	.25
Classroom Events	$\overline{X}$	S.D.	S.E.	$\overline{X}$	S.D.	S.E.
Drill	20.86	6.86	1.77	22.31	6.80	1.70
Activities	10.86	6.46	1.67	12.75	8.87	2.22
Classroom Management	6.86	6.07	1.56	3.18	4.31	1.08

Interactions	N	Relative Frequency	N	Relative Frequency
Product	55	43.3%	52	44.4%
Process	25	19.7%	10	8.5%

TABLE 15

Full-Rehearsal Comparison of Pre-and Post-Test Differences for Total Sample

Item	Pre-Test			Post-Test		
Behaviors	$\overline{X}$	S.D.	S.E.	$\overline{X}$	S.D.	S.E.
1	3.17	1.29	.31	3.25	1.07	.27
2	2.93	1.28	.33	3.31	1.25	.31
3	1.76	.83	.23	2.84	1.35	.37
4	2.23	1.24	.34	3.15	1.28	.36
5	2.25	1.39	.49	2.70	1.25	.40
6	2.83	1.12	.32	3.15	1.46	.41
7	2.78	.89	.24	3.60	1.18	.31
8	3.07	.83	.22	4.00	.71	.17
9	2.50	1.09	.31	3.28	.99	.27
10	3.35	.10	.24	3.82	.81	.20
11	3.40	.83	.21	4.00	.93	.24
12	3.25	.78	.19	3.73	1.33	.34
13	1.66	1.11	.37	3.41	1.51	.43
14	3.33	1.00	.33	3.64	.10	.24
15	2.86	1.19	.31	3.68	1.45	.36
16	2.54	1.37	.41	3.84	.69	.19
17	2.63	1.29	.39	3.64	1.22	.33
18	2.75	1.36	.39	3.33	1.29	.33
19	3.43	1.26	.32	3.68	.95	.24
20	3.21	1.19	.32	3.35	1.28	.34
21	3.53	1.06	.27	4.14	.77	.21
22	3.35	1.17	.28	4.06	.85	.21
23	3.82	.81	.20	4.13	.83	.22
24	3.35	1.11	.27	3.94	1.03	.25
25	3.33	1.11	.29	3.93	.68	.17
26	3.54	1.37	.41	3.92	.76	.21
27	0	--	--	2.87	.99	.35
28	0	--	--	2.85	1.22	.46
29	3.00	.85	.25	3.85	.86	.23
30	0	--	--	3.92	.76	.21
31	0	--	--	3.61	1.33	.37
Classroom Events	$\overline{X}$	S.D.	S.E.	$\overline{X}$	S.D.	S.E.
Drill	23.23	9.91	2.41	24.50	9.13	2.15
Activities	12.29	6.61	1.60	6.88	3.71	.87
Classroom Management	7.94	5.45	1.32	5.17	3.03	.72
Interactions	N	Relative Frequency		N	Relative Frequency	
Product	59	54.1%		42	56.0%	
Process	13	11.9%		1	1.3%	

TABLE 16

General Music Comparison of Pre-and Post-Test Differences for Total Sample

Item	Pre-Test			Post-Test		
Behaviors	X̄	S.D.	S.E.	X̄	S.D.	S.E.
1	2.83	1.60	.65	3.80	1.30	.58
2	2.80	1.79	.80	4.00	1.41	.71
3	2.80	1.30	.58	4.50	.58	.29
4	3.60	.55	.25	3.50	1.29	.65
5	2.40	1.52	.68	3.00	1.73	1.00
6	2.60	1.34	.60	4.50	.71	.50
7	2.60	1.34	.60	4.25	.50	.25
8	3.66	.52	.21	4.25	.96	.48
9	3.00	1.41	.63	4.20	1.30	.58
10	3.33	1.37	.56	3.40	1.82	.81
11	3.83	.98	.40	4.00	1.00	.45
12	2.83	.98	.40	3.66	1.53	.88
13	2.80	1.79	.80	3.75	1.89	.95
14	2.00	1.41	1.00	4.00	1.41	.71
15	2.75	1.50	.75	4.33	.58	.33
16	3.25	1.50	.75	2.50	2.12	1.50
17	3.50	1.73	.87	3.33	1.53	.88
18	3.25	1.50	.75	2.66	1.53	.88
19	3.66	.52	.21	3.40	1.52	.68
20	3.25	1.50	.75	3.50	1.29	.65
21	3.83	.98	.40	3.50	1.29	.65
22	3.00	1.27	.52	3.60	1.14	.51
23	3.16	1.47	.60	3.60	1.14	.51
24	3.40	1.14	.51	3.41	1.14	.51
25	3.16	.75	.31	3.21	.84	.37
26	3.00	1.41	.71	3.50	.71	.50
27	0	--	--	2.75	1.50	.75
28	0	--	--	2.75	.50	.25
29	2.50	1.29	.65	4.00	.00	.00
30	0	--	--	4.00	.00	.00
31	0	--	--	3.50	.71	.50
Classroom Events	X̄	S.D.	S.E.	X̄	S.D.	S.E.
Drill	6.16	8.35		16.60	12.24	5.47
Activities	22.50	12.16		27.40	11.15	4.99
Classroom Management	14.16	9.58		7.80	9.15	4.09
Interactions	N	Relative Frequency		N	Relative Frequency	
Product	76	53.9%		22	57.9%	
Process	24	17.0%		11	28.9%	

TABLE 17

Sectional Comparison for Pre- and Post-Test Correlated Differences for Total Sample

Item	Cases	Pre-Test			Post-Test			Probability Level
Behavior	N	$\overline{X}$	S.E.	S.E.	$\overline{X}$	S.D.	S.E.	(2-tail)
1	12	3.42	1.56	.45	3.33	1.30	.38	.89
2	10	3.40	1.51	.48	3.60	1.17	.37	.73
3	5	2.00	.71	.32	3.20	1.64	.74	.26
4	9	3.56	1.24	.41	3.44	1.24	.41	.87
5	5	3.00	1.87	.84	2.90	1.60	.71	.93
6	11	3.55	1.57	.47	3.86	1.14	.34	.62
7	13	3.08	1.12	.31	3.88	1.16	.32	.10
8	12	3.42	.90	.26	3.96	.14	.04	.04*
9	10	2.90	1.60	.50	3.85	1.20	.38	.15
10	14	3.71	1.33	.35	3.85	1.23	.33	.79
11	13	3.76	.73	.20	4.15	.38	.10	.09
12	11	2.82	1.25	.38	3.09	1.76	.53	.69
13	4	2.00	1.41	.71	1.75	1.50	.75	.82
14	9	3.33	1.12	.37	3.17	1.54	.51	.76
15	12	3.50	1.17	.33	3.33	1.37	.40	.75
16	11	3.45	1.29	.39	3.55	1.13	.34	.80
17	6	3.75	1.47	.60	3.66	1.75	.72	.92
18	6	3.16	1.42	.60	3.00	1.90	.78	.81
19	14	3.32	1.44	.38	3.57	1.39	.37	.59
20	9	2.89	1.90	.63	3.33	2.19	.73	.56
21	13	4.07	.76	.21	3.77	1.36	.38	.52
22	14	3.46	1.31	.35	3.93	1.39	.37	.42
23	14	3.71	1.07	.29	4.18	.87	.23	.26
24	13	3.65	1.11	.31	3.46	1.39	.39	.73
25	14	3.71	.99	.27	4.00	.78	.21	.34
26	8	3.50	.76	.27	3.63	1.19	.42	.83
27	1	4.00	.00	.00	4.00	.00	.00	--
28	--	--	--	--	--	--	--	--
29	8	3.63	1.06	.37	3.12	1.13	.40	.35
30	1	3.00	.00	--	--	--	--	--
31	0	--	--	--	--	--	--	--
Classroom Events	N	$\overline{X}$	S.D.	S.E.	$\overline{X}$	S.D.	S.E.	Probability Level
Drill	14	20.82	7.58	2.05	21.90	6.10	1.63	.67
Activities	14	11.68	6.78	1.81	13.54	8.76	2.34	.59
Classroom Management	14	7.36	5.65	1.51	3.17	3.98	1.06	.04*
Interactions	N	$\overline{X}$	S.D.	S.E.	$\overline{X}$	S.D.	S.E.	Probability Level
Product	14	3.75	4.45	1.19	3.46	3.61	.96	.82
Process	14	1.32	2.49	.62	.64	.84	.23	.35

* - Indicates Significant level of .05 or less.

TABLE 18

Full-Rehearsal Comparison for Pre-and Post-Test Correlated Differences

Item	Cases	Pre-Test			Post-Test			Probability Level
Behaviors	N	$\overline{X}$	S.D.	S.E.	$\overline{X}$	S.D.	S.E.	(2-tail)
1	14	3.32	1.10	.30	3.29	.94	.25	.92
2	12	3.00	.95	.28	3.21	1.20	.35	.62
3	9	2.00	.87	.29	3.11	1.45	.48	.01*
4	8	2.19	1.13	.40	3.44	1.40	.50	.002*
5	5	2.60	1.52	.68	3.40	1.52	.68	.02*
6	9	3.00	1.00	.33	3.67	1.23	.41	.08
7	10	2.75	.86	.27	3.55	.76	.24	.01*
8	12	2.95	.81	.23	3.88	.75	.21	.01*
9	9	2.56	1.01	.33	3.39	.70	.23	.04*
10	15	3.33	1.05	.27	3.77	.82	.21	.22
11	12	3.50	.80	.23	4.04	.62	.18	.02*
12	14	3.29	.83	.22	3.75	1.09	.29	.13
13	5	2.00	1.41	.63	3.50	1.22	.55	.18
14	8	3.50	.93	.33	3.75	.46	.16	.35
15	12	3.00	1.04	.30	3.63	1.45	.42	.11
16	8	2.75	1.28	.45	3.81	.84	.30	.07
17	9	2.89	1.30	.43	3.00	1.19	.37	.84
18	11	2.90	1.30	.39	2.91	1.22	.37	1.00
19	15	3.53	1.25	.32	3.70	.84	.22	.62
20	12	3.50	1.00	.30	3.25	1.36	.29	.61
21	12	3.50	1.17	.38	4.08	.79	.23	.17
22	14	3.39	1.27	.34	3.93	.90	.24	.21
23	13	3.96	.78	.22	4.08	.76	.21	.62
24	15	3.43	1.02	.26	3.70	1.13	.29	.55
25	12	3.50	.80	.23	3.83	.62	.18	.28
26	6	3.50	1.05	.43	3.83	.52	.21	.39
27	0	--	--	--	--	--	--	--
28	0	--	--	--	--	--	--	--
29	8	3.00	.93	.38	3.81	.92	.33	.16
30	0	--	--	--	--	--	--	--
31	0	--	--	--	--	--	--	--
Classroom Events								
Drill	15	24.63	9.03	2.33	23.97	8.16	2.11	.81
Activities	15	12.26	6.77	1.75	6.93	4.01	1.04	.02*
Classroom Management	15	8.27	5.73	1.48	5.37	2.68	.69	.09
Interactions								
Product	15	4.13	4.09	1.06	2.60	3.31	.86	.31
Process	15	1.47	3.31	.86	.03	.13	.03	.12

* - Indicates a Significance level of .05 or less.

Table 19

Summary of Context Scores for Total Sample

Context	Pre-Test		Context	Post-Test	
Sectional Items	Low Scores	High Scores	Sectional Items	Low Scores	High Scores
Behaviors	#3, 13 (N=2)	#2, 4, 6, 10, 11, 14, 15, 16, 17, 19, 21-27, 29 (N=18)	Behaviors	#12, 13 (N=2)	#3-11, 16, 19, 20-28 30, 31 (N=22)
Events	Activities Classroom Mgmt.	Drill	Events	Drill Classroom Mgmt.	Activities
Interaction	Product	Process	Interaction	Product Process	
Full Rehearsal Items			Full Rehearsal Items		
Behaviors	#3, 4, 13 (N=3)	#21, 23, 26 (N=3)	Behaviors	(N=0)	#7, 8, 10-12, 14-17, 19, 21-26, 29-31 (N=19)
Events	Activities Classroom Mgmt.	Drill	Events	Activities	Drill Classroom Mgmt.
Interaction	Process	Product	Interaction	Process	Product
General Music Items			General Music Items		
Behaviors	#5, 14, 29 (N=3)	#4, 8, 11, 17, 19, 21 (N=6)	Behaviors	(N=0)	#1-4, 6-9, 11-15, 20-23, 26, 29-31 (N=21)
Events	Drill	Activities Classroom Mgmt.	Events	Drill Activities	Classroom Mgmt.
Interaction		Process Product	Interaction		Process Product

Question 3

Another purpose of the present study was to investigate the effect of types of feedback on the pre-service teachers' performance of teaching behaviors. Within this context, question 3 asks:

> What effect did the feedback modes have on the behavior means exhibited by the two experimental groups?

In answering this question both quantitative and qualitative data were analyzed. Quantitative results, included in Tables 20, 21 and 22 present pre- and post-significant differences of the matched behaviors, the classroom events, and the interactions for each group. In addition Table 23 presents the summary of groups' high and low scores in the pre- and post-test behaviors, classroom events and interactions. The results demonstrated the effectiveness of the behaviors for each group and conclusions were drawn as to the most effective treatment received by each group.

The qualitative analysis is in accordance with the findings presented in the Effects of Feedback section in Chapter V. However, conclusions are presented here in terms of group differences rather than subject differences. In addition the discussion also presents information from the Instructional Behavior Evaluation Form about each group's perception of the treatment which is then discussed in relation to the effects of the feedback.

Results

In this section the pre-post test behaviors and their resulting effects in terms of academically engaged times are discussed. In addition to the significant differences of the pre- and post-test scores, non-significant differences will be discussed. The high ratings of the non-significant differences are scores of 3.5 or above for the behaviors, and above the average mean scores for the classroom events and interactions. The low ratings of the non-significant differences are scores of 2.5 or below for the behaviors, and below average mean scores for the classroom events and interactions.

The significant difference of the two experimental groups differed. In Group A there were eleven significant differences, and in Group B there was only one (see Tables 20 and 21).

The large (but non-significant) differences between the two groups also merit discussion. From Table 23, Group A received low ratings on three behaviors in the pre-test and none in the post-test, while in Group B there were two behaviors rated low in the pre-test and none in the post-test. However, the high rating for Group A's post-test changed from six to twenty-eight, while Group B's post-test highs changed from nine to thirteen. For a more complete description of the changes see Appendix N.

There were no significant differences in the classroom events and interactions for either Group A or Group B.

The non-significant changes for the experimental groups' classroom events and interactions are as follows: Group A's pre-test scores included low ratings in activities, classroom management and product questions and the high ratings included drill and process questions. Group B's pre-test scores included low ratings in drill and product questions and highs in activities, classroom management and process questions.

TABLE 20

Identification of Significant Behaviors for Group A

Item	Cases	Pre Test			Post Test			Probability Level
Behavior	N	$\bar{X}$	S.D.	S.E.	$\bar{X}$	S.D.	S.E.	(2-tail)
1	8	2.69	1.03	.36	3.93	.56	.20	.05 *
2	7	3.00	1.16	.43	4.21	.56	.21	.08
3	4	1.25	.50	.25	3.25	.95	.48	.02 *
4	5	2.10	1.24	.56	3.70	.45	.20	.04 *
5	2	4.00	.0	.0	5.00	.00	.00	.04 *
6	5	3.40	1.52	.68	4.00	1.23	.55	.31
7	8	2.44	.98	.35	4.06	1.08	.38	.01 *
8	7	3.50	.76	.29	3.92	.45	.17	.05 *
9	7	3.42	1.28	.48	3.78	.70	.26	.56
10	8	3.37	1.60	.57	4.56	.50	.18	.13
11	8	3.62	.74	.26	3.94	.68	.24	.10
12	4	2.50	1.29	.65	3.87	1.03	.52	.22
13	2	1.00	.00	.00	3.25	1.06	.75	.21
14	4	3.75	.50	.25	4.00	.82	.41	.39
15	6	3.00	1.10	.45	4.00	.84	.34	.02 *
16	6	3.33	1.63	.67	3.91	.20	.08	.42
17	4	2.87	1.31	.65	4.25	.50	.25	.09
18	4	2.50	1.29	.65	4.25	.50	.25	.04 *
19	8	3.31	1.49	.53	4.25	.71	.25	.14
20	6	3.17	1.47	.60	4.67	.82	.33	.11
21	7	3.43	.98	.37	4.57	.54	.20	.02 *
22	8	3.37	1.22	.43	4.69	.46	.16	.04 *
23	8	3.31	1.22	.43	4.50	.53	.19	.06
24	7	3.42	1.01	.37	4.21	.39	.15	.06
25	7	3.57	.79	.30	4.00	.64	.24	.31
26	5	3.20	.84	.37	4.00	.79	.35	.04 *
27	0	--	--	--	--	--	--	--
28	0	--	--	--	--	--	--	--
29	4	3.50	.58	.29	3.88	.63	.32	.21
30	0	--	--	--	--	--	--	--
31	0	--	--	--	--	--	--	--
Classroom Events								
Product	8	3.31	3.67	1.30	2.38	2.26	.80	.62
Process	8	1.94	3.17	1.12	.56	7.05	.37	.28
Drill	8	22.12	9.85	3.48	24.06	9.27	3.28	.72
Activities	8	9.81	6.36	2.25	11.69	6.57	2.32	.66
Classroom Management	8	6.75	6.62	2.34	3.31	2.52	.89	.22

* - Indicates Significance level of .05 or less.

TABLE 21

Identification of Significant Behaviors for Group B

Item	Cases	Pre Test			Post Test			Probability Level
Behavior	N	$\overline{X}$	S.D.	S.E.	$\overline{X}$	S.D.	S.E.	2-tail
1	7	2.86	1.78	.67	2.64	.75	.28	.75
2	6	3.00	1.55	.63	2.50	.84	.34	.42
3	5	2.60	.55	.25	3.60	1.51	.68	.14
4	6	3.33	.81	.33	3.50	1.64	.67	.86
5	6	2.50	1.76	.72	2.50	1.38	.56	1.00
6	6	3.67	1.21	.49	3.67	1.51	.62	1.00
7	8	3.00	1.07	.38	3.62	.74	.26	.25
8	8	3.37	.52	.18	3.75	.89	.31	.29
9	7	2.28	1.38	.52	3.71	.95	.36	.09
10	8	3.75	1.28	.45	2.87	1.13	.40	.16
11	6	3.17	.98	.40	3.83	.41	.17	.10
12	8	3.13	.99	.35	3.37	1.30	.46	.52
13	6	2.50	1.38	.56	2.83	1.72	.70	.75
14	6	2.83	1.33	.54	3.33	1.03	.42	.36
15	7	3.43	1.40	.53	3.21	1.41	.53	.79
16	5	2.40	1.34	.60	3.00	1.41	.63	.50
17	5	3.00	1.87	.83	2.40	1.14	.51	.55
18	6	2.83	1.72	.70	2.17	1.17	.48	.33
19	8	3.62	1.30	.36	2.29	1.17	.41	.06
20	8	3.13	1.55	.55	2.50	1.07	.38	.30
21	7	4.42	.54	.20	3.00	1.29	.49	.02 *
22	8	3.87	1.46	.52	2.69	1.03	.37	.09
23	8	4.00	1.41	.50	3.87	.64	.22	.71
24	8	3.75	1.03	.37	2.50	1.31	.47	.11
25	7	3.29	1.11	.42	3.43	.79	.30	.77
26	3	3.67	1.53	.88	3.00	1.73	1.00	.69
27	0	--	--	--	--	--	--	--
28	0	--	--	--	--	--	--	--
29	4	3.00	1.15	.38	3.25	.96	.48	.79
30	0	--	--	--	--	--	--	--
31	0	--	--	--	--	--	--	--
Classroom Events								
Product	8	4.25	4.62	1.63	4.50	4.53	1.60	.90
Process	8	1.25	.05	.73	.25	.46	.16	.28
Drill	8	18.25	8.99	3.18	20.87	6.11	2.16	.17
Activities	8	16.50	5.24	1.85	12.19	9.17	3.24	.28
Classroom Management	8	10.12	8.89	3.14	5.25	4.06	1.44	.23

* - Indicates Significance level of .05 or less.

TABLE 22

Identification of Significant Behaviors for Group C

Item	Cases	Pre Test			Post Test			Probability Level
Behavior	N	$\overline{X}$	S.D.	S.E.	$\overline{X}$	S.D.	S.E.	2-tail
1	13	4.00	1.08	.30	3.15	1.28	.35	.05 *
2	10	3.60	1.17	.37	3.20	1.32	.42	.44
3	6	2.00	.63	.26	2.83	1.72	.70	.29
4	7	3.29	1.60	.61	3.14	1.35	.51	.74
5	3	2.00	1.73	1.00	2.83	1.04	.60	.20
6	9	3.00	1.41	.47	3.72	.97	.32	.14
7	8	3.13	1.13	.40	3.56	1.12	.40	.35
8	10	2.80	1.03	.33	3.95	.16	.05	.004*
9	7	2.57	1.51	.57	3.21	1.35	.51	.38
10	15	3.40	1.12	.29	3.60	1.12	.29	.62
11	13	3.85	.80	.22	4.15	.55	.15	.30
12	14	3.07	1.14	.30	3.29	1.64	.44	.66
13	2	1.00	.00	.00	1.00	.00	.00	.00
14	8	3.37	1.19	.42	3.06	1.42	.50	.56
15	11	3.27	1.01	.30	3.36	1.63	.49	.86
16	8	3.50	.93	.33	3.88	.10	.35	.20
17	7	3.86	1.07	.40	3.14	1.57	.60	.28
18	8	3.50	.93	.33	2.63	1.60	.57	.13
19	15	3.40	1.24	.32	3.60	1.11	.29	.56
20	9	3.22	1.56	.52	2.89	1.05	.35	.55
21	12	3.75	1.13	.33	3.92	1.08	.31	.74
22	14	3.14	1.35	.36	4.00	1.04	.28	.08
23	13	3.92	.64	.18	3.81	1.11	.31	.72
24	15	3.47	1.19	.31	3.73	1.16	.30	.56
25	14	3.71	.91	.24	3.93	.83	.22	.49
26	6	3.67	.52	.21	3.88	.41	.17	.61
27	0	--	--	--	--	--	--	--
28	0	--	--	--	--	--	--	--
29	8	3.37	1.18	.42	3.38	1.30	.46	1.00
30	0	--	--	--	--	--	--	--
31	0	--	--	--	--	--	--	--
Classroom Events								
Product	15	4.27	4.25	1.09	2.57	3.00	.78	.18
Process	15	1.20	3.08	.79	.20	.41	.11	.24
Drill	15	23.60	8.53	2.20	21.63	8.71	2.25	.38
Activities	15	11.20	6.66	1.72	9.43	7.39	1.91	.52
Classroom Management	15	8.60	5.68	1.47	5.50	6.20	1.60	.18

* - Indicates Significance level of .05 or less.

TABLE 23

Summary of Group Scores

GROUP	PRE-TEST		GROUP	POST-TEST	
Group A Items	Low Scores	High Scores	Group A Items	Low Scores	High Scores
Behaviors	#3, 7, 13 (N=3)	#5, 6, 9, 11, 14 (N=6)	Behaviors	N=0	#1, 2, 4, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31 N=28
Events		Drill Activities Classroom Management	Events		Drill Activities
Interaction	Process	Product	Interaction	Classroom Mgmt. Product	Process
Group E Items			Group B Items		
Behaviors	#3, 16 (N=2)	4, 10, 19, 21, 23, 24 (N=7)	Behaviors	#2, 5, 17, 18, 27 (N=5)	#3, 7, 8, 9, 11, 12, 13, 14, 15, 23, 25, 29, 31 (N=13)
Events	Drill	Activities Classroom Management	Events	Drill	Activities Classroom Mgmt.
Interaction	Product	Process	Interaction		Product Process
Group C Items			Group C Items		
Behaviors	#3, 5, 13 (N=3)	#1, 10, 11, 16, 17, 18, 19, 21, 23, 25, 26 (N=11)	Behaviors	#13 (N=1)	#6, 7, 8, 10, 16, 19, 21, 22, 23, 24, 25, 27, 30 (N=14)
Events		Drill Activities Classroom Management	Events	Drill Activities	Classroom Mgmt.
Interaction	Process	Product	Interaction	Process	Product

The post-test non-significant scores include the following: for Group B, low ratings were obtained in drill and highs in activities, classroom management, process questions and product questions. Group A's ratings include lows in classroom management, product and process questioning and drill, and highs in activities.

In summary the largest change (from low to high or vice versa) for Group A's pre- to post-scores occurred in activities which changed from low to high and process questioning which changed from high to low while the largest change for Group B occurred in product questions which changed from low to high.

Discussion

The discussion of modelling for question 1 also gave the results for feedback (see p. 106). The findings indicated that Group A which received verbal feedback, had more significant differences (i.e., eleven) in the behaviors than Group B (i.e., one) which received written feedback or Group C (control) which received no feedback. In addition, the results indicated that Group A was also better in that the amount of academic engagement time was higher than in Groups B and C. Group A also increased their activity and drill time, while Group B and Group C increased the drill time only.

From the above findings, it is evident that the behavior changes led to more activity time and fewer process questions for Group A while more product questions helped lead to the changes incurred by Group B.

The stimulated recall interviews yielded information regarding each subject's perceptions of feedback. Following is a discussion of the similarities of these feedback perceptions found in Chapter V: Effects of Feedback.

Post Hoc Analysis

All Group A members believed that the behaviors were helpful in their teaching and their beliefs were supported. Positive results were noted on nearly all the behaviors which in turn produced advantageous results in the classroom (i.e., more time on drill and activities and less time on classroom management). All but one subject found that the verbal feedback aided them with lesson planning. The one exception believed she only benefited to a limited degree. For further information regarding the effects of feedback see Chapter V.

All the Group B members also believed that the behaviors were helpful in their teaching but Melab observations of their teaching performance indicated that this was not so. Many behaviors were rated low after the treatment and as a result many inconsistent findings were noted in the classroom events (i.e., more drill time and less activity time). Because of the decrease in performance in the behaviors, evidence was presented indicating that Group B subjects had a problem with planning. In addition, all had problems identifying with the cues provided in the written feedback. For further information regarding the behaviors, see Appendix E.

Question 4

Since there is some evidence available suggesting that teaching style (i.e., behaviors 19-26) and interactions (i.e., behaviors 27-31) are only learned by experience, (c.f., modelling treatment) the present researcher investigated this area. Within this context, question 4 asks:

> Do the behavior means of the in-service teaching behaviors differ significantly from those of the pre-service teachers?

Two mean score comparisons were conducted; the first presented in Tables 24, 25 and 26 was the pre-test scores of the in-service teachers compared to the pre-test scores of the pre-service teachers on the thirteen common behaviors (numbers 19-31), while the second presented in Tables 27, 28 and 29 compared the pre-test scores of the in-service teachers to the post-test scores of the pre-service teachers. The first set of results compared the significant differences between the groups before testing while the second demonstrated the significant differences for the researcher's pre-service group after treatment. In addition Tables 30 and 31 present the summary of both group comparisons.

Conclusions for the effectiveness of the teaching style and interaction behaviors were presented in light of the planning data results (behaviors 1-18). In addition the effectiveness of the feedback was presented for each group and discussed separately.

Results

The first set of results indicates whether the CRT random group of teachers is significantly different from the researcher's pre-service sample. To investigate this question, the pre-test results of the CRT sample are compared to the pre-test results of the researcher's sample.

From Table 31, evidence is presented that the CRT in-service sample and the researcher's pre-service sample are generally the same since there were few significant differences when the groups were compared; Group A demonstrated two significant differences, Group B one, and Group C two.

The last set of results give evidence as to whether the CRT in-service pre-test behavior scores are significantly different than the researcher's pre-service post-test scores. The results demonstrated the effectiveness of the treatment (i.e., modelling). This comparison gave evidence to a number of behavior mean differences. Before discussing these differences, it is important to note Group A, B and C's differences. In comparing the groups pre- and post-test scores on the thirteen behaviors, Group A improved substantially on every behavior except one, Group B decreased on every behavior except one, while Group C did not change their behavior scores.

In the post-treatment comparison, Group A's ratings on the behaviors included ten higher, two the same, and one lower than the CRT pre-test scores. In Group B all behaviors except one were rated lower than the CRT scores. In Group C all except one of the behaviors were below the CRT sample.

In summary although Group A increased (not in all cases significantly) on nearly all behaviors, because of the smallness of the sample, only five of these behavior differences were significant. Group B's performance declined on most of the behaviors and of these differences six were significant. Group C remained unchanged; however, when compared to the CRT pre-test, nearly all Group C scores were below the CRT means (one significantly low) and one exception being significantly high.

TABLE 24

Comparison of Pre-Test Scores for CRT Sample and Group A

Behavior	Group - Means	t-test			Behavior	Group - Means	t-test		
		T Value	Degrees of Freedom	2-tail prob.			T Value	Degrees of Freedom	2-tail prob.
19	CRT sample 4.13 Group A 3.31	1.55	7.26	.166	26	CRT 3.89 A 3.00	2.56	107	.012*
20	CRT sample 3.98 Group A 3.00	2.10	7.27	.074	27	CRT 4.32 A 4.00	.48	112	.629
21	CRT sample 4.13 Group A 3.43	1.89	6.30	.108	28	CRT 3.85 A .00	47.88	110	.000
22	CRT sample 4.08 Group A 3.38	1.62	7.31	.149	29	CRT 3.59 A 3.50	.18	104	.857
23	CRT sample 4.21 Group A 3.31	2.07	7.31	.077	30	CRT 3.31 A 3.00	.28	84	.783
24	CRT sample 3.91 Group A 3.43	1.95	118	.054*	31	CRT 4.05 A .00	60.53	102	.000
25	CRT sample 4.01 Group A 3.57	1.65	118	.102					

* - Indicates Significance level of .05 or less.

TABLE 25

Comparison of Pre-Test Scores for CRT Sample and Group B

Behavior	Group - Means	t-test			Behavior	Group - Means	t-test		
		T Value	Degrees of Freedom	2-tail prob.			T Value	Degrees of Freedom	2-tail prob.
19	CRT sample 4.13 Group B 3.63	1.09	7.33	.312	26	CRT 3.80 B 3.33	.91	5.18	.404
20	CRT 3.98 B 3.13	1.55	7.19	.165	27	CRT 4.32 B .00	69.94	112	.000
21	CRT 4.13 B 4.13	.02	7.38	.983	28	CRT 3.86 B .00	47.88	110	.000
22	CRT 4.08 B 3.88	.40	7.22	.703	29	CRT 3.59 B 2.57	2.57	107	.012*
23	CRT 4.22 B 4.00	.43	7.23	.678	30	CRT 3.31 B .00	27.09	.84	.000
24	CRT 3.99 B 3.75	.88	119	.382	31	CRT 4.05 B .00	60.53	102	.000
25	CRT 4.02 B 3.29	1.71	6.28	.138					

* - Indicates Significance level of .05 or less.

TABLE 26

Comparison of Pre-Test Scores for CRT Sample and Group C

Behavior	Group - Means	t-test			Behavior	Group - Means	t-test		
		Value	Degrees of Freedom	2-tail prob.			T Value	Degrees of Freedom	2-tail prob.
19	CRT sample 4.13 Group C 3.40	2.23	15.39	.041*		CRT 3.90 C 3.89	.03	110	.975
20	CRT 3.98 C 3.18	1.79	10.42	.104	27	CRT 4.32 C .00	69.94	112	.000
21	CRT 4.13 C 3.77	1.18	12.88	.259	28	CRT 3.86 C .00	47.88	110	.000
22	CRT 3.08 C 3.13	2.77	15.02	.014*	29	CRT 3.59 C 3.31	.95	113	.343
23	CRT 4.22 C 3.93	1.54	126	.126	30	CRT 3.31 C .00	27.09	.84	.000
24	CRT 3.99 C 3.47	1.66	15.39	.117	31	CRT 4.05 C .00	66.53	102	.000
25	CRT 4.01 C 3.67	1.78	126	.078					

* - Indicates Significance level of .05 or less.

TABLE 27

Comparison of Pre-Test Scores for CRT Sample and Post-Test Scores for Group A

Behavior	Group - Means	t-test		
		T Value	Degrees of Freedom	2-tail prob.
19	CRT sample 4.13 Group A 4.25	- .43	119	.670
20	CRT sample 3.98 Group A 4.67	-2.41	114	.018*
21	CRT sample 4.13 Group A 4.63	-2.22	119	.028*
22	CRT sample 4.08 Group A 4.68	-2.49	118	.014*
23	CRT sample 4.21 Group A 4.50	-1.14	119	.256
24	CRT sample 3.99 Group A 4.31	-1.26	119	.212
25	CRT sample 4.01 Group A 4.00	.06	119	.956
26	CRT 3.90 A 4.29	1.20	108	.234
27	CRT 4.32 A 3.43	3.33	118	.001*
28	CRT 3.86 A 3.83	.07	115	.945
29	CRT 3.59 A 3.81	- .60	108	.548
30	CRT 3.31 A 3.94	-3.25	19.18	.004*
31	CRT 4.05 A 4.10	- .17	106	.866

* - Indicates Significance level of .05 or less.

TABLE 28

Comparison of Pre-Test Scores for CRT Sample and Post-Test Scores for Group B

Behavior	Group - Means	t-test.			Behavior	Group - Means	t-test		
		Value	Degrees of Freedom	2-tail prob.			T Value	Degrees of Freedom	2-tail prob.
19	CRT sample 4.13 Group B 2.69	5.05	119	.000*	26	CRT 3.90 B 3.30	1.52	106	.132
20	CRT 3.98 B 2.50	3.87	7.41	.006*	27	CRT 4.32 B 2.50	3.61	5.15	.015*
21	CRT 4.13 B 3.00	2.31	6.17	.061	28	CRT 3.86 B 2.67	3.35	115	.001*
22	CRT 4.08 B 2.69	5.43	118	.000*	29	CRT 3.59 B 3.50	.20	105	.843
23	CRT 4.22 B 3.88	1.38	119	.170	30	CRT 3.31 B 3.00	.61	88	.545
24	CRT 3.99 B 2.50	3.18	7.30	.015*	31	CRT 4.05 B 3.70	1.13	106	.261
25	CRT 4.01 B 3.56	1.78	119	.078					

* - Indicates Significance level of .05 or less.

TABLE 29

Comparison of Pre-Test Scores for CRT Sample and Post-Test Scores for Group C

Behavior	Group - Means		t-test			Behavior	Group - Means		t-test		
			T Value	Degrees of Freedom	2-tail prob.				T Value	Degrees of Freedom	2-tail prob.
19	CRT sample Group C	4.13 3.60	1.81	15.77	.089	26	CRT C	3.90 3.77	.48	112	.629
20	CRT C	3.98 3.23	2.43	13.09	.030*	27	CRT C	4.32 3.80	1.68	116	.095
21	CRT C	4.13 3.86	.98	14.16	.342	28	CRT C	3.59 3.20	1.66	114	.100
22	CRT C	4.08 4.00	.29	14.41	.779	29	CRT C	3.59 3.33	.72	109	.471
23	CRT C	4.21 3.81	1.31	13.06	.214	30	CRT C	3.31 4.00	3.32	18.43	.004*
24	CRT C	3.98 3.73	.83	15.45	.421	31	CRT C	4.05 3.45	1.35	10.48	.207
25	CRT C	4.01 3.93	.43	125	.669						

* - Indicates Significance level of .05 or less.

TABLE 30

A Summary Comparison Between CRT Pre-Test Score and Researcher's Post-Test Score

ITEM	CRT (Total Sample) Pre-Test	Group A Post-Test	Group B Post-Test	Group C Post-Test
Behaviors	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$
19	4.13	4.25	2.68*	3.60
20	3.98	4.66*	2.50*	3.23*
21	4.13	4.62*	3.00	3.85
22	4.08	4.68*	2.68*	4.00
23	4.21	4.50	3.87	3.80
24	3.98	4.31	2.50*	3.73
25	4.01	4.00	3.56	3.92
26	3.89	4.28	3.30	3.77
27	4.31	3.42*	2.50*	3.80
28	3.85	3.83	2.66*	3.20
29	3.59	3.81	3.50	3.33
30	3.31	3.93*	3.00	4.00*
31	4.04	4.10	3.70	3.45

* - Indicates Significance level of .05 or less.

Discussion

From both the review of literature on teacher effectiveness and the high pre-test scores of the thirteen behaviors of the in-service teachers, it can be concluded that the behaviors dealing with teaching style and interaction are important in teaching.

Since the pre-treatment results for all groups were nearly the same, evidence was given to substantiate the equality of the groups in the pre-test. However, in the post-test, several differences appear. Group A's scores were higher on nearly every behavior except two when compared to the CRT in-service pre-test scores, and Group B and Group C's behavior scores were lower on all behaviors. This gives evidence as to the effectiveness of the verbal feedack treatment for Group A which also received high ratings in the planning behaviors (numbers 1-18). A number of studies give evidence that teaching style and interaction behaviors can only be learned from experience during the first years of teaching; however, the results for Group A indicate that these behaviors can be effectively learned before entering the teaching field. In conclusion, it may be that effective planning results in better teaching style and more effective classroom interactions. In addition, microteaching using modelling techniques and verbal feedback is an effective technique for training both teaching style and interaction behaviors.

TABLE 31

A Summary Comparison Between Total CRT Pre-Test Score and Researcher's Pre-Test Score

ITEM	CRT (Total Sample) Pre-Test	Group A Pre-Test	Group B Pre-Test	Group C Pre-Test
Behaviors	X̄	X̄	X̄	X̄
19	4.13	3.31	3.62	3.40*
20	3.98	3.00	3.12	3.18
21	4.13	3.42	4.12	3.76
22	4.08	3.37	3.87	3.13*
23	4.21	3.31	4.00	3.93
24	3.91	3.42*	3.75	3.46
25	4.01	3.57	3.28	3.66
26	3.89	3.00*	3.33	3.88
27	4.31	4.00	0	0
28	3.85	0	0	0
29	3.59	3.50	2.57*	3.30
30	3.31	0	0	0
31	4.04	0	0	0

* - Indicates Significance level of .05 or less.

CHAPTER V

QUALITATIVE RESULTS

Introduction

The purpose of this chapter is to answer question 5 which asks:

How did each type of feedback affect each subject?

Since ascertaining the effects of feedback for each subject was the primary aim of question 5, stimulated recall interviews were conducated with the members of Groups A and B which respectively received verbal and written feedback.

The results are presented in terms of planning phenomena and personal phenomena. A discussion of these results is presented in the Effects of Goal Setting and the Effects of Feedback sections.

For the planning phenomena, the stimulated recall interviews explored the intents of the lessons. These intents were represented by the planning processes of goals and objectives, instructional strategies, instructional delivery systems, and content structure and sequence. Both the intended and observed behavior calculations used these same categories for analyses. Observations for the pre- and post-tests resulted in mean scores on thirty-one behaviors, time durations for classroom events (drill, activities and classroom management) and the number of interactions for both experimental groups. From the stimulated recall, information was collected concerning the intended behaviors of teaching, while in the Melab observation, information was collected concerning the observed behaviors of teaching.

In the personal phenomena information, background was collected about each subject's musical and academic history (see Appendix Q). In addition information was collected from the stimulated recall interviews about: decision-making which involved interactions and instructional methodology, reflections which arose from the subject's introspection concerning the events of a lesson, and self-evaluation which was concerned with personal teaching behaviors.

The Effects of Goal Setting are discussed in light of the results obtained from the planning phenomena and personal phenomena, which include the time spent on classroom management, drill and activities, and the amount of class interaction. Finally, discrepancies between the perceived effectiveness and the actual effectiveness of the behaviors resulting in certain classroom events are also discussed in terms of goal setting.

The last section encompasses the Effects of Feedback, which are discussed in light of the results of goal setting problems, the teaching style behaviors (numbers 19-26), and the perceived effectiveness of the treatment (Instructional Behavior Evaluation Form, Appendix P). The findings of the preceding are discussed in terms of the effectiveness of the feedback (verbal or written) for each subject.

Chapter V presents a summary of each of these findings for each subject and concludes with a post hoc analysis.

DENIS

The data results are presented in the areas of planning phenomena and personal phenomena, and are discussed in the sections on Effects of Goal Setting and Effects of Feedback.

Planning Phenomena

The stimulated recall interview reveals the following about Denis' prepared and unprepared activities.

In the planning of the lesson, Denis was effective in setting an objective for the class and demonstrating it. He wanted the students to notice certain melodies in the music and he demonstrated these by playing a record of the melodies he had selected. The instructional delivery system was unprepared, however, as demonstrated by the fact Denis was not clear whether he wanted the students to talk about melodies or play them. The sequence of the lesson activities was also unprepared as demonstrated by the fact that he assumed that the students could play the complete melodic line without rehearsing its various subsections or phrases. When questioned, Denis was even unsure about the length of the melodic line, and about the types of rhythmic notation and the key he wanted pupils to use. His explanation of what comprises a melody reflected confusion about the difference between a thematic unit and a melody. Decisions made during the course of the lesson were unplanned. That this was so was demonstrated by Denis' lack of directions for a new student who arrived in the class. In organizing the performance of the students' melodies, Denis didn't plan the delivery system for the students, as was demonstrated by the students' arguing about who was to play first, what he would play, and who the leader was to be. Even though there was confusion as to how to perform the melody, the specific right and wrong composing techniques were not discussed. Denis did manage to praise and reward student's efforts.

Denis' evaluation of the lesson consisted of reflections on the instructional strategies he employed and his own teaching ability. At the end of the lesson, he stated that he was not sure whether, after the students had played their melodies, they really had heard them or whether they were merely improvising. Recalling the teaching strategies he used, Denis stated that he would use the same objective again but that he would change the procedure for developing it. He also stated that he didn't know how much the students were accomplishing and believed that if he were better organized he would be able to indicate each student's accomplishments to the class.

The observations made by the coders in the Melab lesson indicated the following changes in Denis' teaching performance.

In the formation of goals and objectives, for sectional and general music classes, Denis rated below average (2.5 or below) in the pre-test, whereas, in the full-rehearsal, he was average. He improved to above average (above 3.5) in both sectionals and full-rehearsals post-tests; and even though below average in the general music post-test, he did successfully formulate a general music goal which had not been attempted in the pre-test. He was not successful in having the students note the objective in any of the classes.

In his instructional delivery system, the following changes occurred. In both the pre- and post-tests, Denis scored low on the beginning-of-the-lesson behaviors. He had difficulty gaining the students' attention in all of the classes. However, what was presented in the lesson was clear and organized and was at the level of the students' comprehension for both the pre- and post-tests. In the use of disciplinary techniques, Denis scored low in both the pre- and post-tests in using criticism, directing disciplinary action accurately, and preventing misbehaviors from continuing. He improved in his use of criticism in sectionals but not in full-rehearsal or general music, although in the latter, his presentations to the class improved.

In instructional strategies, the following changes were observed. Denis successfully explained the objective in the full-rehearsal and sectionals post-tests despite being unable to do so in any of the pre-tests. However, he did not succeed in optimizing the use of the academic learning time in the post-test even though he was moderately successful in selecting material suitable to the students' level of understanding. He was unable to accomplish this in sectionals and general music classes in the pre-test.

In organizing the content and sequence of the lesson, the following changes were observed. In the sectionals and full-rehearsals pre- and post-tests, but not in general music, Denis successfully put the objective back at the end of the lesson. He reviewed the main ideas of the lesson in the sectionals and full-rehearsals post-tests but not in the pre-tests. However, he failed to review any of the main ideas in the general music pre- and post-tests. He developed an appropriate student evaluation system for the sectionals and full-rehearsals post-tests despite his failure to do so in the pre-tests. He successfully left the students with a feeling of accomplishment in the sectional post-test but not in either the sectional or full-rehearsal pre-tests. His overall smoothness which was facilitated by the smooth flow of the lesson was successful in the full-rehearsal and sectional pre-tests but not in the sectional post-test. He maintained the pace of the lesson in the full-rehearsal and sectional pre-tests but not in the post-tests. He maintained the pace in the general music post-test despite not doing so in the pre-test.

In his use of interaction behaviors, Denis rated low in his interactive techniques in the pre- and post-tests for all classes.

In summary, the coders' observations of the Melab lessons revealed the following about Denis' teaching performance:

1. His demonstrations were clearly presented.
2. He successfully (displayed improvement) formulated goals and objectives in class.
3. He was successful in implementing instructional strategies.
4. He demonstrated both successes and failures in content structure and sequencing information.
5. He was unsuccessful in calling the class to attention before teaching.
6. He failed to attend to disciplinary problems effectively.
7. He was unsuccessful in optimizing the use of academic learning time in any of the classes.

Personal Phenomena

Several items in Denis' personal background are of importance. He was a third year student at the time of the present study, had completed most of his music requirements and was currently enrolled in education courses. He had studied piano for eight years and had passed the Western Board Grade VIII piano examination. Even though he had not been enrolled in public school music he had participated as a pianist in several ensembles and bands.

A number of items are of importance in Denis' decision-making processes. There was a discrepancy between his interactive and instructional decisions, the former being unplanned while the latter were planned. Interactively, he had not thought of using the students' ideas and/or experiences in developing the objective at the beginning or evaluating it at the end of a lesson, nor of using the students' ideas for developing a melody during a lesson. However, in planning the instructional decisions, he selected a listening example for the beginning of a lesson, and decided that the students would produce pentatonic melodies with a given time signature at any tempo a student wished. Therefore, even though the content definition had been decided, Denis did not plan its sequence.

On reflection, Denis remarked on a number of important items. He noted the differences between teaching in the microteaching situation with peers and with junior high children. Most of his reflections were self-evaluative. He concluded that he wouldn't change the lesson objectives but would change the procedures for developing them. He didn't think that he was successful in using students' ideas for developing the lesson. He also indicated that the use of positive reinforcement would have helped the students to feel successful at the end of the lesson.

Effects of Goal Setting

In Denis' use of the behaviors cited above, the following classroom effects were noted. In all classes, he increased his time in drill but in full-rehearsal and general music he also increased the time spent on activities. However, the biggest change in teaching was a substantial decrease in the amount of time spent on classroom management in all classes. The most consistently used interaction (except in full-rehearsal) were product questions of which considerably more were used in the pre-test than in the post-test.

The Instructional Behavioral Evaluation for Denis indicated that he found the treatment behaviors "most effective" for selecting instructional strategies and conducting small group activities. He gave no indication about successes and failures in other areas of planning and implementation of instruction (see Appendix P). Denis, who was in the group that received lower ratings in the post-test, obtained these lower ratings despite his perceived effective use of the behaviors (i.e. successes and failure in content structuring and sequencing). These had the disadvantage of resulting in less time spent on classroom drill and activities. Because of his behavioral inconsistency and its resulting harmful effects, it is evident that Denis had problems in goal setting.

Effects of Feedback

In discussing the appropriateness of the behaviors, Denis found they were effective (a rating of 1 or 2) in their underlying principles, clarity, usefulness, interest and structure. He indicated that he learned a great deal in the lectures, in the microteaching situations, and when implementing the behaviors in the Melab classroom. He stated that, while the behaviors developed an approach to teaching in general, he would have preferred examples more specifically related to teaching secondary music.

Denis concluded that the treatment was beneficial (a rating of 2). Denis' teaching performance demonstrated the following stylistic changes. He scored low in overlappingness, (being able to attend to more than one issue at a time), and in withitness (being aware of what was happening in the classroom), while in the post-test he displayed higher ratings in warmth and empathy for his pupils. He was moderately able to motivate the pupils in both the pre- and post-tests.

In summary, even though Denis stated that the treatment behaviors and the written feedback were helpful in his teaching, the results indicate the opposite suggesting that the goal setting problems led to lower behavior ratings which in turn produced non-advantageous results in classroom events. Denis' case is representative of a finding common to all subjects in Group B -- problems relating to goal setting can be attributed to the treatment (i.e written feedback) given.

MARGARET

The results are presented in the areas of planning phenomena and personal phenomena, and are discussed in the sections on Effects of Goal Setting and Effects of Feedback.

Planning Phenomena

The stimulated recall interview of the microteaching lesson revealed that some of Margaret's activities were prepared and others were not.

In planning for the microteaching lesson, Margaret had prepared an objective (i.e. accent) to be demonstrated to the class. She had decided to count aloud the meter of her musical example to demonstrate its accents to the class, without their participation. Her reflections focussed on how her interactions with her peers would have been different had they been with children. She then played another record with a different accent pattern but being unable to find the grooves she wished to use, she settled for another section that demonstrated her point less adequately. When questioned to assess her understanding of musical accents, no content confusion was apparent since she was able to devise an effective review of the content covered.

In the middle of the lesson, it had been Margaret's intention to lead the students to discover accent through the use of rhythm instruments and through directed questioning. But when they became confused she immediately changed her instructional approach and began giving more direction. The students then played their compositions and Margaret commented on them. At one point, she led a student to understand the difference between an original and an accented version of a melody by having him alter the original accentuation (an interactive decision on Margaret's part). She stated that she had problems formulating process questions which she solved either by answering them herself or by turning them into open-ended comments. She used the question "what did you (the student) do?" very often.

At the end of the lesson, Margaret found that she had forgotten to make a tape of the students' compositions so she decided instead to sing a number of selections and ask questions about her use of accent.

That the sung examples were spontaneous was evident from the fact that one particular example introduced a crescendo effect which could have confused the class. She ended the lesson by saying, "yeah, that's right" and then dismissed the class.

In summary, Margaret was prepared to state and demonstrate the objective. Her instructional delivery system was unprepared as demonstrated by the fact that she had to clarify her directives in order to assist students in discovering accents on their own. The fact that she used instruments, questions and examples indicated that the instructional strategies were planned. Margaret prepared a satisfactory definition of accent but did not prepare an effective sequence for teaching it.

The Melab coders' observation indicate the following changes in Margaret's teaching performance.

In the formulation of goals and purposes, Margaret was successful (a rating of 3.5-4.5) in the sectional pre-test but not in the post-test. In the full rehearsal pre-test she was moderately successful (a rating of 2.5-3.5) and very successful (4.0-5.0) in the post-test.

In her instructional delivery system, although Margaret was unsuccessful at bringing the class to attention in the sectional pre- and post-tests she was only moderately successful in the full-rehearsal pre- and post-tests. Although moderately successful in clearly presenting the information at the students' level of comprehension in the sectional and full-rehearsal pre-test, she was more successful in both groups in the post-test. She improved and was successful in her use of praise and criticism in sectional post-tests but not in the full-rehearsal post-test. In both groups she had problems directing disciplinary action accurately and preventing misbehaviors from continuing but she was successful in maintaining clarity in her presentations in both the pre- and post-tests.

In the instructional strategies she used, Margaret displayed a number of changes. In demonstrating the lesson objective in the sectional pre-test, she was very successful but not (a rating of 1) in the post-test. In the full-rehearsal, Margaret was initially moderately successful but was very successful (a rating of 5) in the post-test. Margaret successfully used a variety of learning activities in the pre-test for both types of classes but did not optimize the learning time in the full-rehearsal post-test. For the pre- and post-test in both classes, she selected material which was appropriate to the students' level of understanding.

In structuring and sequencing the content, Margaret was moderately successful in developing an appropriate evaluation system for the sectional pre-test but was below average (below 2.5) in the post-test; for the full-rehearsal, she was moderately successful at first but more successful in the post-test for both classes. She was successful in maintaining a smooth flow to the lesson in the pre-test but not in the post-test. The pace of the lesson was rated lower in the post-test for both groups.

In summary, the Melab observations reveal the following about Margaret's teaching performance:

1. Margaret's success at formulating goals and purposes changed from the pre- to the post-tests. She was successful in the sectional pre-test but unsuccessful in the post-test. In

full-rehearsal she was initially successful but was more successful in the post-test.

2. She was unsuccessful ~~at~~ bringing the class to attention in the sectional pre- and post-tests but was moderately successful in full-rehearsal.
3. Margaret was clear in her pre- and post-test presentations to both types of classes.
4. Her use of praise, criticism and disciplinary actions varied in effectiveness in the pre-tests and post-tests.
5. Margaret was moderately successful in her use of instructional strategies in both classes but did not optimize the amount of learning time in the full-rehearsal post-test.
6. She rated low in the post-tests for both classes in developing an appropriate evaluation system and maintaining a good pace for the lesson. However, she was more successful in developing an evaluation system for the sectional post-test.

Personal Phenomena

Margaret's personal background contains several items of importance. She was a fourth year university student, had completed all her music requirements and was enrolled mostly in education courses. She had spent six years in school music programs playing clarinet and french horn. At the University of Alberta, she took voice lessons and directed and performed in bands and choirs.

In Margaret's decision-making processes, those involving interactions and instructional strategies are important. On a number of occasions she made planned decisions regarding instruction. For example, she decided how to demonstrate accents and how she was going to have the students discover their qualities. She also decided to question the students at the end of the lesson to discover how well they understood accents. Her interactive decisions were not as numerous as those made about instruction as evidenced by her having a student replay his composition with accents added at certain points in order to notice the change.

There are several items of importance in discussing Margaret's understanding of content structure and sequencing. Margaret was secure in her understanding of content structure, but not in its sequencing. Asked why she didn't teach normal musical accentuation, she stated that it had previously been covered. She did not know how much content to cover in a lesson and asked what level of understanding was attainable by junior high students.

Margaret's "reflective thoughts" were mainly self-evaluative. She had noticed that certain notes in her singing were flat and that she answered too many of her own questions. She did not feel good about her teaching performance in general. She pinpointed her faults in questioning, talking too much and nervousness, and was displeased with her sequencing and content coverage.

Effects of Goal Setting

In Margaret's use of the treatment behaviors, the following classroom events and their effects are important. In sectionals, her drill time remained unchanged but the time spent on activities decreased in the pre- and post-tests. The result was a doubling of the amount of time spent on classroom management. In the full-rehearsal, the drill and activities time was unchanged but the time spent in classroom management increased.

Margaret's interactions included an above average number of questions in full-rehearsals but an average number in sectionals. Although she asked questions in both the pre- and post-tests, most of those asked in the former were product questions while those in the latter were mainly process questions. In full-rehearsals the reverse was true.

The Instructional Behavior Evaluation (see Appendix P) indicated that Margaret thought the treatment behaviors were effective (a rating of 4 or 5) in assisting her to select goals and objectives, develop instructional strategies, organize classroom discipline, develop materials and activities, plan with others, and develop procedures and evaluation techniques. She also stated that the behaviors were especially effective for motivating students, conducting small group activities, giving directions, questioning and responding, and utilizing audio-visual equipment.

Margaret was in experimental Group B which received written feedback and like the others in that group, had inconsistencies in her performance of the behaviors which diminished her general teaching style in the post-test, especially in sectionals. This diminution produced negative results in the classes she taught, i.e., more time in classroom management and little increase in time on drill or activities. Even though she indicated she believed that the treatment behaviors were helpful to her, the results indicate the opposite. Because of her behavioral inconsistency and its negative effects on classroom events, it is concluded that Margaret had problems in goal setting.

Effects of Feedback

In her discussion of the effectiveness of the treatment behaviors, Margaret indicated that they were effective (a rating of 1 or 2) in their underlying principles, clarity, usefulness, interest and structure. She indicated that she had learned a great deal (a rating of 1) in the lectures, the microteaching sessions, and in her use of the behaviors in Melab. She believed the structured plan of implementing the behaviors during the microteaching lessons to be especially valuable but that more than the three week treatment period was needed for practising the behaviors. Margaret stated that, all things considered, the instructional treatment was excellent.

The general characteristics of Margaret's teaching follow. She had average scores (a rating of 2.5-3.5) on withitness in the sectional and full-rehearsal pre-tests which fell to below average in the post-tests. Her overlappingness scores were high in the pre-tests for both types of class but became low in the post-tests. In her ability to motivate the students, she attained high scores in both music classes in the pre-tests but low in the post-tests. The scores attained in warmth and empathy also dropped in the post-tests.

In summary, even though Margaret believed that the treatment behaviors and written feedback were helpful in her teaching, the results indicate the opposite. It would appear that problems in goal setting led to lower ratings in the use of the teaching behaviors and produced negative effects on classroom events (e.g., too much time was spent on classroom management). Problems related to goal setting are attributed therefore to the treatment effect of written feedback.

REINER

The data results are presented in the areas of planning phenomena and personal phenomena, and are discussed in the sections on Effects of Goal Setting and Effects of Feedback.

Planning Phenomena

The stimulated recall interview of the microteaching lesson reveals that some activities were planned and others were not.

In the planning of lesson, Reiner was effective in presenting an objective for the class and demonstrating it in a variety of ways. However, in demonstrating the concept of "melodic imitation," Reiner didn't understand the content structure and demonstrated melodic and rhythmic variation instead of imitation. Even after the interviewer explained the difference between variation and imitation, Reiner still failed to understand. He made use of a student's idea by asking him a question and suggesting that he demonstrate his answer. These interactive decisions occurred at the beginning of the lesson.

During the middle part of the lesson, Reiner divided the class into groups and instructed each group to compose an example of imitation. In one group, he asked a student to start a theme to be immediately imitated with similar ideas by two other students. He asked the students not to verbalize their thoughts about imitation but to demonstrate them directly in performance. The students couldn't do this and in order to avoid confusion, Reiner asked them to play a two measure melody which he later asked them to extend to six. This was a decision based on an interaction between himself and a student. Reiner apparently intended to develop some type of evaluation since he made a tape of the student's composition. However, he found that he had not left sufficient class time to analyze the taped composition.

In summary, Reiner had planned the lesson goals and purposes and decided on the type of delivery system (mode of presentation) to the class. The fact that he did not anticipate some problem demonstrated that not all of his instructional strategies were planned. There was little evidence that he had adequately planned the content structure of musical imitation. Often his content sequencing decisions were based on spontaneous interactions with the students.

The observations made by the coders in Melab indicate the following changes in Reiner's teaching performance.

In the formulation of goals and objectives, Reiner was moderately successful (a rating of 3.0-4.0) in presenting an objective to the class in the pre-test; however, he was unsuccessful in the post-test as evidenced by his failure to define the objective or to have the students note it either in full-rehearsal or sectional. No pre- post-test general music comparisons are available for Reiner.

Reiner demonstrated many behavior changes when the pre- and post-test results of his delivery system were compared. Although he was successful (a rating of 3.5 or above) in bringing the class to attention in the pre-test, he was not in either the sectional or full-rehearsal post-test. In the sectional pre-test, he presented the information clearly but did not do so in the post-test. He was, however, able successfully to communicate at the pupils' level of comprehension in both the pre- and post-tests. Although Reiner successfully used praise, criticism and disciplinary action in the sectional pre-test, he did not succeed in doing so in the post-test, and in the full-rehearsal pre- and post-tests, his presentations were clear.

In instructional strategies, the following changes were observed. Although Reiner successfully demonstrated the objectives in the full-rehearsal and sectional pre-tests, he did not do so in the post-tests. He remained average (2.5-3.5) in his use of instructional activities in both full-rehearsals and sectionals. He was successful in optimizing the pre-test learning time for both music contexts but for only the full-rehearsal in the post-test. Even though he did not select material at the students' level of understanding in the pre-tests for either of the music contexts, he was successful in the full-rehearsal post-test.

In the area of content structure and sequence, the following changes were observed. In the sectionals, Reiner was moderately successful in developing a pre-test evaluation system; however, in the post-test he was less successful (2.5 or below). He was extremely successful at developing an appropriate full-rehearsal evaluation system in the post-test although not in the pre-test. He did, however, leave the students with a feeling of accomplishment in the sectional pre- and post-tests but did not successfully do this in the sectional pre-test. Reiner was very successful (a rating of 4.5 or above) in facilitating a smooth flow of events in the sectional pre-test but was not in the post-test. However, he was very successful in this behavior in both full-rehearsal pre- and post-tests. He was successful at maintaining the pace of the lesson at all times in all classes.

In summary, the Melab observation revealed the following about Reiner's teaching performance:

1. Reiner's success at formulating goals and purposes diminished between the pre- and post-tests, whereas, in sectional and full-rehearsal pre-tests, he successfully presented the objective and had the students note it; he did not do so in either of the post-tests.
2. Reiner was inefficient at bringing either class to attention in the post-test, although he was able to do this in the pre-test.
3. Reiner consistently communicated at the students' level of comprehension and presented demonstrations clearly to all classes.
4. His system of disciplinary techniques changed between the pre- and post-tests. Although he was successful in the use of praise, criticism, and disciplinary action in the sectional pre-test and the full-rehearsal pre- and post-tests, he was not in the sectional post-test.
5. In content structure and sequence, variations were observed between Reiner's pre- and post-test scores.
6. He was successful in optimizing academic learning time in most classes.

Personal Phenomena

Several items are important in Reiner's personal background. He was a fourth year student who had completed his music courses and was taking courses in his minor, German, as well as Melab. He had been enrolled in school music programs and had passed the Grade VII Western Board clarinet examination. He had taught himself piano and played in various stage, concert and dance bands. He also had a variety of experience singing in choirs.

Reiner's decision-making processes involving interactions and instruction are important. His decisions involving interactions affected the instructional delivery system he used. For instance, in presenting the students' imitation examples he had one student play the first two measures which the other students then elaborated. Although the content structure appeared planned, when questioned, he did not supply an adequate definition of "melodic imitation." His plan to present the content was successful but upon reflection he concluded that he had lectured too much and it would have been better to have more class involvement. He also questioned the amount of praise he should use with the class.

Effects of Goal Setting

Reiner's use of the various behaviors described immediately above, had the following effects on classroom events. In the sectionals, he increased the amount of drill time and decreased the amount of time devoted to activities and classroom management. The time Reiner spent in classroom management and in drill and activity time varied in both music contexts. He used interactive questions infrequently in both contexts in the pre- and post-tests.

The Instructional Behavior Evaluation (see Appendix P) indicated that Reiner believed that the treatment behaviors were effective (a rating of 1 or 2) in assisting him to select goals and objectives, develop instructional strategies, organize classroom discipline, develop materials and activities, plan with others, develop procedures and evaluation techniques, provide an appropriate atmosphere for students, motivate them and conduct small group activities.

Reiner was in Group B which received written feedback, and like the other members of that group, was inconsistent in his behaviors which were generally lower in the post-tests. Reiner's variations in classroom events resulted from his inconsistent use of the behaviors and because of these circumstances it can be concluded that Reiner had problems in goal setting in his teaching.

Effects of Feedback

In discussing the appropriateness of the suggested instructional behaviors, Reiner indicated that the behaviors were effective (a rating of 1 or 2) in their underlying principles, clarity, usefulness, interest and structure. He indicated he had learned a great deal (a rating of 1) in the lectures and from implementing the behaviors in the microteaching sessions in Melab. He believed that the treatment and the written feedback were helpful in his teaching. However, his belief may have been mistaken since both his behaviors and classroom event times were rated below average after the treatment. Problems relating to goal setting therefore can be attributed to the treatment (i.e., written feedback) he received.

LORI

The data results are presented in the areas of planning phenomena and personal phenomena, and are discussed in the sections on Effects of Goal Setting and Effects of Feedback.

Planning Phenomena

The stimulated recall interview of the microteaching lesson reveals that some activities were prepared and some were unprepared.

In planning for the microteaching lesson, Lori prepared an objective and presented it in a demonstration. She provided a review of what had been accomplished at the last lesson and had the students note the objective which was "canon." She sequenced the concept by going from motives, (by listening to a record) to phrases (by singing "Row, Row, Row Your Boat") and finally to canon. Instead of presenting her examples for canon, however, she presented imitation of phrasing instead and was unsure where and why she used it. She kept the class involved in her examples during the demonstrations.

In the middle of the lesson, Lori explained to the class what she had hoped to accomplish the day before by having them compose a short piece. She then asked them to add to their compositions a canon which they had just improvised on rhythm instruments.

For the end of the lesson, she played the compositions back to the class on tape and checked their understanding of canon by questioning.

In summary, Lori was prepared to state and demonstrate the objective. She was unprepared in her instructional delivery as evidenced by her unsureness about which sub-concept should be presented. The strategies were planned as evidenced by her selection of the listening and singing examples, her taping the compositions and her asking evaluative questions. However, there was much confusion about content structure and its sequencing which tended to produce an erratic flow of classroom events.

The observations made by the coders during the Melab lesson for the present study indicated the following changes in Lori's teaching performance.

In the formation of goals and purposes, Lori was successful (a rating of 4.0) in establishing the objective in any of the pre- and post-tests. In having the students note the objectives for full-rehearsal and general music, Lori was unsuccessful (a rating of 2.0) in the pre-test and very successful in the post-test. (Note: only pre-test scores are available for sectionals and only post-test scores for general music).

In her instructional delivery system, Lori was successful in calling the class to attention in the general music and full-rehearsal post-tests. She was moderately successful in the sectional and full-rehearsal pre-test in her use of praise and directing disciplinary action accurately; but she was generally less successful (a rating of 1.0 in criticism) in the full-rehearsal and general music post-tests.

Lori was successful in giving clear presentations to all classes in both the pre- and post-tests.

In the instructional strategies used, Lori was successful in demonstrating the objective in the full-rehearsal and sectional pre-tests and improved to very successful (a rating of 5.0) in the full-rehearsal post-tests. Lori was moderately successful (a rating of 3.0) in using a variety of instructional techniques in the sectional and full-rehearsal pre-tests but was very successful with only the classes who took part in the post-tests.

In structuring and sequencing the content, Lori was generally successful in the end-of-the-lesson behaviors in the pre- and post-tests for all classes. The only exception was in putting the objective back in the repertoire where Lori was moderately successful in the pre-tests and improved in the post-tests in all classes. However, she was less successful in smoothness and momentum in general music and full-rehearsal post-tests.

In summary, the Melab observation revealed the following about Lori's teaching performance:

1. In setting goals and purposes, Lori was generally successful in the pre- and post-tests for the classes tested.
2. In Lori's instructional delivery system she was successful in calling the classes to attention in both the pre- and post-tests for all classes. She was less successful in the general music and full-rehearsal post-tests, however, in her use of criticism. She was successful in giving clear presentations to the class in the pre- and

post-tests for all classes.

3. In the use of instructional strategies, Lori remained successful in demonstrating the objective to all classes. She improved in her use of instructional techniques.
4. In structuring and sequencing content, Lori remained generally successful in all classes in the end-of-the-lesson behaviors. However, she was less successful in the general music and full-rehearsal post-test on smoothness and momentum.

Personal Phenomena

Several items are important in noting Lori's personal background. Lori was a third year student whose major was English and whose minor was music. She had taken only a few music courses and was currently enrolled in music curriculum and instruction courses and English courses. She had studied privately for ten years and had passed a Grade VIII piano examination. She had not had any experience in school music, ensembles or large instrumental groups.

Two areas are of interest in Lori's decision-making processes, her class interactions and her instructional strategies. Decisions about content structure were planned as evidenced by her sequencing motive, phrase and canon at the beginning of the lesson. However, in concept sequencing, she was uncertain of the content goals for phrasing, which she explained in a confused manner, and melody and its sequencing. However, her instructional strategy of singing "Row, Row, Row Your Boat" as an aid to the understanding of phrasing was planned. Most of her interactive decisions were spontaneous and intended to correct her teaching mistakes. All of her corrections were self-initiated.

In summary, Lori was insecure in her understanding of the content structure and its sequencing. As a consequence of her over reliance on an advisor's explanation which she inadequately understood, she used the concepts of motive, phrase and canon incorrectly resulting in problems of sequencing, especially in the case of "canon."

Effects of Goal Setting

The following effects of the behaviors previously described, are important for classroom events. In the full-rehearsal post-test, Lori increased the drill time and decreased the time spent in activities. In the full-rehearsal, the time spent on classroom management was halved in the post-test. In general music about three-fifths of the time was spent on drill and the remainder on activities. Very little time was spent on classroom management in the general music post-test and sectional pre-test. Lori asked ten product questions in the full-rehearsal pre-test as compared to four in the post-test. However, in the general music post-test seven process questions were asked. Lori was effective (a rating of 3.0-4.0) in asking a variety of students to respond to questions, in giving clues which improved responses, and in accepting students' comments and ideas.

Lori was in the group which received written feedback on their behavior. From the stimulated recall information, it is possible to infer that Lori could plan lesson objectives and activities. However, she was uncertain about how to present information to the students and about concentrating in the Melab observations, and even though favorable effects were noted in the classroom events, i.e., little time spent in classroom management and much time in activities and drill, these ratings were similar in both the pre- and post-tests. It is evident therefore, that Lori had problems in goal setting.

Effects of Feedback

In discussing the values of the treatment behaviors, Lori like all of her Group B colleagues indicated that the behaviors were effective (a rating of 1 or 2) in their underlying principles, clarity, usefulness, interest and structure. She indicated that she had learned a great deal from the lectures and in practising the behaviors in the microteaching sessions and in Melab. She suggested that the greatest strength of the treatment was in the written feedback, that using peers in microteaching was less effective than using children and that more planning aids should be included in the microteaching sessions. All things considered, Lori believed the treatment to be excellent.

There were stylistic changes in Lori's teaching performance in the following behaviors. Lori was rated lower (from 4.5-3.5) in withitness, persuasiveness and overlappingness in the general music and full-rehearsal post-test. Her warmth and empathy in all classes remained the same.

That Lori did not benefit as a result of the treatment was evidenced by:

1. Her problems with goal formulation as revealed in the stimulated recall interview.
2. Her ratings (3.0 or lower) in most of the planning behaviors (#1-18) rated the same or lower in the post-test.
3. Her overall teaching style, the ratings for which decreased.
4. Discrepancies which existed between intended and observed behaviors (i.e. intents of microteaching and observed Melab behaviors).

TOM

The data results are presented in the areas of planning phenomena and personal phenomena, and are discussed in the sections on Effects of Goal Setting and Effects of Feedback.

Planning Phenomena

The stimulated recall interview of the microteaching lesson revealed that some activities were prepared and others were not.

In planning for the microteaching lesson, Tom prepared an objective and demonstrated it to the class. He decided that the class and he would work together on the "accent" concept and that they would first compose a piece of music without accents and then add accents. He decided not to involve the class in the presentation of the objective but rather to play examples of it on his trumpet. The examples and the delivery system for this activity were planned. However, after the first example, the class members asked some unanticipated questions. As a result, the lesson went in a direction different from that which Tom had planned.

The middle of the lesson was originally planned to include class interaction with Tom as he demonstrated the different effects of accents on music. However, as the class increasingly asked questions, Tom found himself introducing the unintended concepts of rhythm, bars and crescendo. He ended the middle of the lesson by playing examples of accents in different kinds of music and explaining their effects on the class.

At the end of the lesson, the class members had composed two compositions, one with accents, and the other without. In the ensuing evaluation, Tom did most of the talking leaving the students' ideas unexpressed. One of the few interactive decisions which did occur resulted from Tom's questioning a student in order to divert him from disturbing the class. At the beginning of the lesson, Tom believed that the class understood his definition of accent, but at the end, he realized that they didn't. He attributed this lack of understanding both to his definition and to his method of presentation.

In summary, Tom prepared, stated, and demonstrated the objectives. However, he had not planned interactions prior to the beginning of the class. The instructional strategies were planned as evidenced by his use of varied demonstrations and his having the class compose two pieces of music. However, the instructional delivery was unplanned since Tom had not intended to complicate the ideas of accents by using terms like rhythm, bars, and dynamics. His recognition that he had wandered into the use of these terms demonstrates that he was secure in his content structure and its sequence. After the lesson, he enquired about how much a junior high class could grasp about accents.

The coders' observations in the Melab lessons for the present study indicate the following changes in Tom's teaching performance.

In the formulation of goals and purposes, Tom was unsuccessful as demonstrated by the fact that he did not define goals in either the full-rehearsal or sectional pre-tests. However, he was very successful (4.0-5.0) in doing so in the sectional post-test and was moderately successful in full-rehearsal (2.0-3.0) post-test.

In his instructional delivery system Tom was not successful in calling the class to attention in the sectional or full-rehearsal pre-tests and post-tests. Tom remained clear in his presentation and communicated successfully (3.5-4.5) at the students' level of comprehension in both the full-rehearsals and sectionals pre- and post-tests. Tom was unsuccessful in the sectional pre-test in his use of praise, but in his use of criticism was successful in both the pre- and post-tests. He failed to direct disciplinary actions correctly in the pre-test for both classes but was successful especially in full-rehearsal in the post-test. Tom was successful in maintaining clear presentations to both classes in both the pre- and post-tests.

In the instructional strategies used, Tom was very successful in presenting demonstrations to the sectionals in pre- and post-test. However, he was unsuccessful in presenting demonstrations in the full-rehearsal in both. In his use of activities, Tom did not use a variety of techniques in either full-rehearsal or sectional pre-tests and was very successful in the sectional post-test. He remained average in the full-rehearsal. Tom kept the students actively involved and productive in both the full-rehearsals and sectionals pre- and post-tests although he was more successful at selecting repertoire at the students' level of understanding for the sectional pre-test than he was in the full-rehearsal pre-test. He was very successful (4.0-5.0) in the post-tests for both classes.

In structuring and sequencing the content, Tom was successful in putting the objective back in the repertoire at the end of the lesson, reviewing the main ideas, and leaving the students with a feeling of accomplishment in the sectional pre-test but not in the post-test. He did however, develop an appropriate evaluation system in both the sectionals and full-rehearsals pre- and post-tests. In the full-rehearsal pre-test, (even more so in the post-test) Tom was successful in putting the objective back in the repertoire, thus increasing his understanding and leaving the students with a feeling of accomplishment. He also was successful in providing a review at the end of the lesson in the full-rehearsal post-test although he had not been in the pre-test.

In summary, the Melab observations revealed the following about Tom's teaching performance:

1. He was successful in establishing an objective in the post-test but not in the pre-test.
2. Although he was more successful in calling the class to attention in the sectional post-test than in the pre-test, he did this successfully in the full-rehearsal pre- and post-tests.
3. Tom was more successful at using praise, criticism and directing disciplinary action accurately in the post-

tests than he was in the pre-tests for both classes.

4. Tom was successful in giving demonstrations to both classes in the pre- and post-tests. However, even though he did not use a variety of activities in the pre-test for either class, he did so successfully in the post-test. He kept the students actively involved in both classes in the pre- and post-tests.
5. Tom was successful in developing an evaluation system for both classes in the pre- and post-tests, but in the latter he also supplied the students with a review of the lesson's main ideas.

Personal Phenomena

Several items are important in Tom's personal background. He was a fourth year student who had completed all his music courses and was currently enrolled mainly in education courses. He had taken high school music courses for four years and studied privately on the trumpet and piano. He also had considerable experience as a trumpet performer in school and professional groups.

In Tom's decision-making processes, those involving interactions and instructional strategies are important. He had decided to present the objective "accent" and to demonstrate it to the class. Because he had planned his instructional decision, he had available numerous examples to present. He also decided that he would tell the students that they would be expected to compose two compositions. When he strayed from his plan he made the instructional decision to return to his original plan. Decisions involving interactions were unprepared however, as demonstrated by the fact that Tom had not anticipated any difficult questions from the class. He also found it difficult to formulate process questions as demonstrated by the fact that he used explanations instead of questions at the beginning of the lesson. An unprepared decision about the delivery system occurred when Tom did not anticipate that the students "would know what rhythm was and [I] just assumed [that] they could know."

Tom, like the other members of Group A, was secure in his understanding of content and also in its sequencing as demonstrated by his avoidance of diversion into the areas of rhythm, bar and dynamics. He stated "my initial concept of teaching the lesson was a very simplistic interpretation of what an accent was, but the students kept asking all these ... complicated questions." He also told the interviewer that although he could discuss accent in detail with his peers, he would not be able to do so with a Grade VII class. This again represents an instructional decision on his part.

Tom's "reflective thoughts" were concerned mainly with the presentation and the justification of the content. He stated that "he felt the way to teach accents wasn't in a (microteaching) class like that but in a piece of music when it happens." The only comment mentioned during reflection on his own teaching performance was "the lesson was pretty good entertainment, eh?"

Effects of Goal Setting

Tom's use of the above behaviors had the following effects on classroom events. In the sectional post-test he more than doubled drill time while he decreased the time spent on activities. Very little time was spent in classroom management in the sectional pre- and post-tests. In full-rehearsal the drill time was increased and activities time was decreased resulting in less time spent on classroom management.

Tom's interactions in the sectionals were mainly process questions in the pre-test and product questions in the post-test. In the full-rehearsal pre-test he used more product questions and fewer in the post-test. He was also successful in asking many students to respond to questions in the sectional post-test. He was not successful in giving clues to students to aid them in answering questions in the post-tests of either class, but was successful at accepting and integrating their comments.

The Instructional Behavioral Evaluation (see Appendix P) indicated that Tom thought the treatment behaviors were effective (a rating of 1 or 2) in assisting him to select goals and objectives, to develop instructional strategies, to organize classroom discipline, to develop materials and activities, to plan with others, to develop procedures and evaluation techniques, to motivate students, to conduct small group activities, to give directions, question and respond, and to utilize audio-visual equipment.

Tom, like the other members of Group A which received verbal comments, improved his performance in the teaching behaviors. This improvement advantageously increased the amount of drill time and in full-rehearsal decreased the classroom management time. Tom believed that the behaviors were helpful to his teaching performance and the results indicate that this was so. Tom had few problems in goal setting as a result of the effective use of the behaviors and their beneficial effects on classroom events.

Effects of Feedback

Tom, like the other Group A members, indicated that the instructional behaviors were effective (a rating of 1 or 2) in their underlying principles, clarity, usefulness, interest and structure. He indicated that he had learned a great deal (a rating of 1) in the lectures, the microteaching sessions and in using the behaviors in Melab and, that the treatment was especially valuable in developing lesson "organizational" skills. He perceived that teaching one's peers in microteaching is difficult and that all groups in the study would have benefited from verbal feedback.

Tom's teaching performance demonstrated the following stylistic behavior changes. He was above average in withitness, persuasiveness, and overlappingness for both classes in the pre- and post-tests. His scores on warmth and empathy were also above average for both classes in the pre-tests, improving in sectionals while staying the same in full-rehearsal.

In summary, Tom believed that the teaching behaviors had helped his teaching and the above observations indicate they did have a positive effect on his overall teaching style. It would appear that the treatment assistance to Tom in goal setting improved his teaching style and performance and led to desirable class events.

RENATE

The data results are presented in the areas of planning phenomena and personal phenomena, and are discussed in the sections on Effects of Goal Setting and Effects of Feedback.

Planning Phenomena

The stimulated recall interview of the microteaching lesson revealed that some activities were prepared and others were not.

In the planning for the microteaching lesson, Renate had prepared the objective "phrase" and demonstrated it to the class by writing the word "phrase" on the board and explaining it. She then presented examples of phrases by using a recording. In order to control discipline at this point, she said "excuse me" to the class and waited to get their attention. She told the class to hold up their hands every time they heard a new phrase after the recording had begun and to stop putting up their hands at the beginning of the interlude. When the class continued to put their hands up during this interlude, Renate decided to ignore the fact.

In the middle of the lesson, she asked the class to compose a "phrase" in order to improve their understanding. She correctly assumed that the students knew which notes to use, their values and the tempo. To make sure that this was so, she asked a student to describe them to the rest of the class. Renate taped the compositions and at the end of the lesson she played them back and questioned the students in depth to check their comprehension. Near the end of the lesson, she repeated without elaboration the definition of "phrase" to remind the class of her original intent. She told the interviewer that student ability to demonstrate and verbalize a phrase would be taken as evidence that they understood.

In summary, the stimulated recall interview revealed that Renate was prepared in her goals and purpose, that the instructional strategies were planned and that the content structure and its sequencing were secure.

The coders' observations in the Melab lessons for the present study indicate the following changes in Renate's teaching performance.

In the formulation of goals and purposes, Renate was moderately successful (3.0-4.0) in the sectional pre-test but not in the post-test. In the full-rehearsal, even though she didn't present an objective in the pre-test, she did so successfully in the post-test.

In her instructional delivery system Renate was unable to bring the class to attention in the sectional pre-test, although she was very successful in the post-test and in the full-rehearsal pre- and post-tests. Although in sectional pre-tests she successfully presented information clearly to the students at their level of comprehension and was even more successful in the post-test, in the full-rehearsal, she was unsuccessful (2.0-2.5) in the pre- and post-tests. Renate very successfully used praise and criticism and directed disciplinary actions accurately in the sectional pre- and post-tests. However, in the full-rehearsal pre-test she was unsuccessful but was very successful in the post-test. Renate improved (3.0-4.5) in her clarity of presentation in both classes.

In her instructional strategies, Renate was successful at giving a demonstration in the sectional pre-test but not in the post-test. In full-rehearsal pre- and post-tests, she failed to present a demonstration successfully. In the full-rehearsal and sectional pre-tests, Renate was very successful at using a variety of instructional techniques, keeping the pupils actively involved, and selecting material appropriate to the students' level of performance and was even more successful in the post-tests.

In structuring and content, Renate was successful in putting the objective back in the lesson, reviewing the main ideas, developing an appropriate evaluation system, and leaving the students with a feeling of accomplishment in the sectional pre- and post-tests. In the full-rehearsal pre-test, she had problems with both these behaviors but was very successful (4.0) in the post-test.

In summary, the Melab observations revealed the following about Renate's teaching performance.

1. She was moderately successful in presenting the objective to the class in the sectionals and full-rehearsals pre- and post-tests.
2. Generally her instructional delivery system improved as she successfully brought the class to attention in the sectional post-test and even more successfully used praise and criticism and directed discipline accurately in the full-rehearsal post-test.
3. In the use of instructional strategies, Renate was successful at using a variety of techniques, keeping the students involved and selecting repertoire at the students' level of performance for both classes in the pre-tests and even more successful in the post-tests.
4. In the structuring of content and sequencing, Renate successfully ended the sectional pre- and post-tests lessons. In the full-rehearsal, she was unsuccessful in the pre-test and very successful in the post-test. Her smoothness and momentum were more successful in the sectional post-tests.

Personal Phenomena

Several items are important in Renate's personal background. Renate was a fourth year student who had completed all her music courses and was currently enrolled in education courses. She had studied piano privately and passed the Royal Conservatory Grade VII examinations. She had been enrolled in school bands for four years on trombone. She had a variety of performance experiences as a pianist, singer, trombonist and choir director.

In Renate's decision-making processes, those involving interactions and instructional strategies are important. Renate made a number of instructional decisions. She formulated an acceptable definition for "phrase" and "motive" and selected recordings to demonstrate her ideas. She also decided on the procedure the class would use to show her that they could identify a motive (i.e. holding up their hands). Renate also made a number of interactive decisions as demonstrated by the fact that she waited for the class to return to attention before playing the record, ignored students who held up their hands at inappropriate times and ignored irrelevant student comment at the end of the lesson.

Renate's 'reflective thoughts' were concerned mainly with content structure and with defending the instructional strategies she used. One instructional decision that she made was demonstrated by her reviewing at the end of the lesson the definition of phrase and motive. This review demonstration was also based on an interaction which had occurred in the class. She reflected also on the value of having the students demonstrate and verbalize their understanding of the meaning of the objective. She stated that "playing and analyzing the taped compositions, pointed out exactly whether or not the students were using the motive and whether or not their piece of music was a phrase." She had few critical reflections on her performance.

Effects of Goal Setting

Renate's use of the above behaviors had the following effects on classroom events. In sectionals and full-rehearsals, Renate increased her drill time and spent at least half the available time on activities (she had spent none in the pre-test) thereby reducing by half the time spent on classroom management. In her interactions in both classes, Renate used fewer questions in the post-tests than in the pre-tests. Only three of these questions were asked in the sectional post-test and none in the full-rehearsal post-test. In the sectional post-test (but not for the full-rehearsal), Renate selected a variety of students to respond, gave them clues for answering the questions and accepted their comments.

The Instructional Behavior Evaluation (see Appendix P) indicates that Renate believed the treatment behaviors to be effective (a rating of 1 or 2) in assisting her to select goals and objectives, develop materials and activities, plan with others, develop procedures and evaluation techniques, motivate students, conduct small group activities, give directions, formulate questions and responses, and utilize audio-visual equipment.

Renate was in the group who received verbal feedback on her behavior. From Renate's stimulated recall interview, it is evident that she was able to adequately plan a lesson. This is confirmed by the results obtained from the coders which also indicate that she improved in planning behaviors (#1-

18). The use of the teaching behaviors also produced desirable results in the classroom i.e. more time was spent on activities and/or drill and less time on classroom management. Therefore, since Renate could develop an adequate plan and could effectively use it, it can be concluded that she had few problems with goal setting. No discrepancy existed with how Renate herself viewed the behaviors and her success at using them.

Effects of Feedback

Renate, like the other Group A members, indicated that the treatment behaviors were effective (a rating of 1 or 2) in their underlying principles, clarity, usefulness, interest, and structure. She stated that she had learned a great deal (a rating of 1) in the lectures and in practising the behaviors in microteaching and in Melab. Renate believed that the feedback she had received during the treatment and the chance for her to analyze her teaching shortcomings were valuable. She believed that the treatment should have been given earlier in the year and; all things considered, she believed it to be excellent.

Renate's teaching performances demonstrated the following stylistic behavior changes. Renate had high scores in withitness and overlappingness in the sectional pre- and post-tests but low scores in the full-rehearsal pre-test. This latter improved to above average in the post-test. Renate was rated above average in persuasiveness in the sectional pre- and post-tests. However, in the full-rehearsal pre-test she was below average although she improved to above average on the post-test. She obtained high scores on warmth and empathy in the sectional pre- and post-tests, low in the full-rehearsal pre-test and average in the full-rehearsal post-test.

In summary, Renate's teaching style improved generally, especially in sectionals. She indicated that the behaviors aided her in working with smaller groups and that they were effective in other areas as well. This resulted in her having little trouble with goal setting which helped her teaching style and produced desirable events. It can be concluded that the verbal feedback was very beneficial for Renate's teaching performance.

LARRY

The data results are presented in the areas of planning phenomena and personal phenomena, and are discussed in the sections on Effects of Goal Setting and Effects of Feedback.

Planning Phenomena

The stimulated recall interview of the microteaching lesson revealed that some activities were prepared and others were not.

For the microteaching lesson, Larry planned to present the objective "canon" followed by a recorded demonstration. At the beginning of the lesson, he explained "canon" and told the class that they were going to sing canons rather than play instruments. That Larry's understanding of canon was secure was demonstrated by the fact that in his recorded example, he directed the students' attention to the voices in which each entry was performed. He then questioned them as to which voices were used in the recording and he showed them the canon entrances on a transparency which he had prepared. He then asked them questions about the choral section and its canonic entries.

In the middle of the lesson, Larry had the students sing the canon first in unison then as a canon. He then summarized what the class had just done. He decided to use a record of a Teleman canon to demonstrate how canons were used in another era of music.

For the end of the lesson, Larry asked the class to think of songs that could be sung in canon. The class realized that "Jingle Bells" could not be so sung since the harmony was inappropriate but that "Row, Row, Row Your Boat" could. He then concluded by having the students sing another round which he had put on a transparency.

In summary, the information for the stimulated recall interview reveals that Larry had planned his goals and purpose, as well as the delivery system he was going to use, and that he had directed his use of interactions according to his original intent. His content structure and sequencing were well organized.

The observation made by the Melab coders for the present study indicate the following changes in Larry's teaching performance.

In the formulation of goals and purposes, Larry was unsuccessful (a rating of 1) in having the students note the objective in the sectional and full-rehearsal pre-tests, very successful (a rating of 4) in presenting the objective in the sectional post-test and successful (a rating of 3.5-4.0) in the full-rehearsal post-test.

In his instructional delivery system, Larry failed to call the class to attention in either the full-rehearsal or sectional pre-tests, although he was very successful in doing this in the sectional and moderately successful in the full-rehearsal post-tests. Larry failed to present information clearly at the students' level of comprehension in the full-rehearsal and sectional pre-tests, however in the full-rehearsal post-test, he was very successful and in the sectional, successful. In his use of criticism, praise, and in directing disciplinary actions accurately, Larry was unsuccessful in the pre-test for both classes and very successful in the post-tests. Larry was unsuccessful in giving a clear presentation to the class in the sectional pre-test but very successful (a rating of 5) in the post-test. In the full-rehearsal, he improved (a rating of 2.5-4.0) in his clarity.

In the use of instructional strategies, Larry did not use demonstrations in sectional pre- and post-tests but in the full-rehearsal post-test he was very successful at doing this. Larry was unsuccessful at using a variety of techniques and keeping the students involved productively in the sectional pre-test but was very successful in the post-test. He did, however, successfully select material appropriate to the students' level of performance in the sectional pre- and post-tests. He failed to select repertoire material which was at the students' level of performance in the full-rehearsal pre- and post-tests.

In structuring and sequencing the content, Larry did not use any of the end-of-the-lesson behaviors successfully in the full-rehearsal or sectionals but was very successful in the sectionals and average in the full-rehearsal post-tests. In both classes, Larry was only average in the pre-tests at maintaining smoothness and momentum in the lesson but was successful (a rating of 4.5-5.0) in the post-tests.

In summary, the Melab observations revealed the following about Larry's teaching performance:

1. In setting goals and purposes, he was very successful in the post-tests while he was unsuccessful in the pre-tests.
2. In his instructional delivery system for both classes, Larry was unsuccessful at calling the class to attention, being clear in his presentation, and directing disciplinary action accurately in the pre-tests, but was successful in the post-tests.
3. In his use of instructional strategies, Larry became very successful in using a variety of techniques and keeping the students productively involved in the post-tests of both classes.
4. In structuring and sequencing content, Larry was successful in developing an evaluation system and leaving the class with a feeling of accomplishment in the post-tests for both classes.
5. Larry became very successful on smoothness and momentum in the post-tests for both classes.

Personal Phenomena

Several items are important in Larry's personal background. He was a fourth year student who had completed all his music requirements and was currently enrolled in music options and education courses. He had studied piano, flute, saxophone, voice and organ privately and had passed Royal Conservatory Grade X piano and Grade IX organ examinations.

He had been in school music programs for three years and had experiences as a choir director, organist, private teacher and dance band director.

Two of Larry's decision-making processes are important: those involving class interactions and those involving instructional strategies. Most of his decisions were instructional. When asked about his instructional strategies, he said: "by using a record, the students are getting aural experience and by showing a transparency, the students are getting pictorial experience." He also explained that he had used another demonstration record to expose the class to two different periods of music. His interactive decision to have the class answer questions rather than telling them about the singing section of the first record was caused by a student's noticing a vocal aspect of the music. His other interactions were planned, e.g., asking the class which instruments were playing in the first recording and having them suggest songs which could be sung as canons. In summary, most of Larry's decisions were planned and instructional.

Most of Larry's 'reflective thoughts' were concerned with planning procedures and class experiences. He indicated that using a number of activities was helpful for planning in general music but that he had not tried this with performing groups. He used singing successfully in the string class and stated that he thought song types would be a good topic for general music. His reflections contained some self-evaluations as demonstrated by the fact that he had provided a review for the class and was glad he had a pen suitable for the transparency. He also reflected that he would like to have had more training in strings before graduating.

Effects of Goal Setting

Larry's use of the above behaviors had the following effects on classroom events. In the sectional post-tests, Larry decreased the drill time and increased the activity time which resulted in no time being spent in classroom management. In the full-rehearsal, Larry increased the amount of drill time and maintained the same activites time thus decreasing the amount of time spent on classroom management. Larry asked only three or four questions in the pre-tests for both classes and even fewer in the post-tests. However, as many pupils were selected to respond, he gave clues for improved responses and he accepted students' comments or ideas. Little evidence was available from his performance to suggest the relative importance of process and product questions.

The Instructional Behavior Evaluation (see Appendix P) indicates that Larry thought the treatment behaviors were effective (a rating of 1 or 2) in assisting him to select goals and objectives, develop instructional strategies, organize classroom discipline, develop materials and activities, plan with others, develop procedures and evaluation techniques, motivate students, conduct small group activities, give directions, formulate questions and responses, and utilize audio-visual equipment.

Larry was in the group which received verbal feedback. From the stimulated recall, it was evident that Larry was able to plan adequately. The coders' scores indicate that he became effective in the use of planning behaviors (#1-18). The effective use of these behaviors resulted in an advantageous increase in drill and/or activities and a corresponding increase in classroom management. Because of the consistent effectiveness of the behaviors and the resulting advantageous classroom effects, it can be concluded that Larry had few problems in goal setting.

Effects of Feedback

In discussing the appropriateness of the suggested behaviors, Larry indicated that they were effective (a rating of 1 or 2) in their underlying principles, clarity, usefulness, interest and structure. He also said that he had learned a moderate amount (a rating of 2) in the lectures, the microteaching sessions, and from using the behaviors in Melab. He suggested the strengths of the treatment were in the use of audio-visual equipment and in inviting student participation but believed that the material presented during lectures should have been more complex. He suggested that he needed more preparation in rehearsal techniques. He considered the treatment good (a rating of 2).

Larry's teaching performance demonstrated the following stylistic changes. He was rated low in withitness and overlappingness in the sectional and full-rehearsal pre-tests but was rated high in the post-tests. He was rated average in persuasiveness in both sectional and full-rehearsal pre-tests but high in both classes in the post-tests. He was also rated average on warmth and empathy in the pre-tests for both classes but was high in the post-tests.

That Larry benefited from the verbal feedback was demonstrated by the fact that:

1. His teaching performance as observed during the stimulated recall interviews was evidence that he had planned well.
2. His teaching performance generally improved in the post-tests on the treatment behaviors.

LILLIAN

The data results are presented in the areas of planning phenomena and personal phenomena, and are discussed in the sections on Effects of Goal Setting and Effects of Feedback.

Planning Phenomena

The stimulated recall interview for the microteaching lesson revealed that some activities were prepared and others were not.

In planning for the microteaching lesson, Lillian presented the concept of "phrase" by explaining it. When questioned about the quality of her explanation she stated that she was "just sort of giving the cognitive concept of what it was by comparing a paragraph to a song and a phrase to a sentence." However, investigation of Lillian's thought processes revealed that while she was teaching, she was thinking of many other things associated with phrases that she did not mention to the class.

After her explanation, she then told the class to think about spring and to compose an accompaniment that would be appropriate for a song about that subject. However, she had not decided upon an adequate instructional stategy to help the class later to develop a short melody about spring. All she told them was to use the pentatonic scale. She gave no direction as to time signature and duration.

In the middle of the lesson, Lillian carelessly told the students to add words to their spring melodies, to notate them and to write the words below the notes. This led to much questioning about her objectives by the class. When questioned in the stimulated interview about her casual manner she stated, "see, I didn't have to tell them to do it, they were doing it anyway [because they were her peers]." In her exoneration of her performance she draw attention to the novelty of her choice of the "spring" theme and pointed out her use of simple vocabulary rather than complicated explanation in class.

After the students had played their compositions without words, Lillian asked a student to explain his composition in order to check his understanding of the pitch relationships. At the end of the lesson, Lillian asked the class to lengthen the melodies they had written and add additional words to complete the song. Again, she had not planned the strategy for this activity. After the class worked for a while, she asked them if they understood what was meant by "phrase," the class nodded and the lesson ended.

In summary, the information from the stimulated recall interviews reveals that Lillian had planned the goals and purpose for the lesson, but had failed to develop strategies. In her delivery system, she had planned to explain the term "phrase" and to ask very few questions. Upon reflection, Lillian seemed secure in the content structure but not in its sequencing.

The observations made by the coders in the Melab lesson for the present study indicate the following changes in Lillian's teaching performance.

In the formulation of goals and purposes, Lillian was very successful in the sectional pre- and post-tests. However, in the full-rehearsal pre-test she was below average but became very successful (4.0-4.5) in the post-test.

In her instructional delivery system, Lillian was moderately successful in bringing the class to attention in the sectional and full-rehearsal pre-tests remaining unchanged in the sectional post-test but improving to very successful in the full-rehearsal. In both classes, Lillian was moderately successful in presenting information to the students clearly at their level of comprehension in the pre-tests and became very successful in the post-tests. She was very successful in using criticism and praise appropriately with both classes in the pre- and post-tests. However, in both groups, she was only moderately successful in the post-tests in directing disciplinary action accurately and preventing misbehaviors from continuing but she became very successful in the post-tests. In her use of clarity, she improved (from 3.0-5.0) in the sectionals and she remained successful in both the full-rehearsal pre- and post-tests.

In the instructional strategies she used, Lillian was very succcessful at giving demonstrations in the sectional pre- and post-tests. However, in the full-rehearsal she was only moderately successful in the pre-test although very successful in the post-test. In her use of activities, keeping the students productively involved, and selecting repertoire at the students level of comprehension, Lillian was successful in the pre- and post-tests for both classes.

In structuring and sequencing the content, Lillian was moderately successful using all of the end-of-the-lesson behaviors appropriately in the full-rehearsal and sectional pre-tests. However, in the post-tests she was successful only in developing an evaluation system and leaving the students with a feeling of accomplishment in the full-rehearsal and in reviewing the main ideas of the lesson successfully in the sectional.

Lillian was only average in the pre-tests for both classes at maintaining smoothness and momentum in the lesson but was very successful in the post-tests.

In summary, the Melab observations reveal the following about Lillian's teaching performance:

1. In the formulation of goals and purposes Lillian was successful in both the sectional pre- and post-tests but improved substantially in the full-rehearsal post-test.
2. In her instructional delivery system, she was very successful in calling both classes to attention but only moderately successful in the sectional pre-test. In both groups, she became very successful in directing disciplinary actions accurately and preventing misbehaviors from continuing in the post-tests. She was successful in her clarity with both groups in the post-tests although having been only moderately successful in the sectional pre-test.
3. In structuring and sequencing content, Lillian was unsuccessful in sequencing all of the end-of-the-lesson behaviors in the pre-tests for both groups but in the post-tests was successful in developing an appropriate evaluation system and in leaving the students with a feeling of accomplishment.
4. Lillian became very successful in her smoothness and momentum in the post-tests with both groups.

Personal Phenomena

There are several items of importance in Lillian's personal background. She was a third year student who had completed her music requirements and was currently enrolled in music options and education courses. She had studied piano privately and passed the Grade VII Royal Conservatory piano examination. Although she had not been enrolled in secondary music programs, she had directed, accompanied and sung in many choirs. She was currently teaching piano and theory privately.

In her decision-making process, two areas are of interest: that involving class interactions and that involving instructional strategies. There were numerous occasions when Lillian's instructional strategy decisions were poorly formulated as when she stated the definition of phrase instead of rambling on the way she did, and that she "should have developed a procedure to help the class develop their short phrases into whole songs." Lillian's initial insecurity about the sequencing of the content created difficulties for her development of strategies as she taught, but once she had a chance to reflect on what had happened in class, she demonstrated competence. One of her few interactive decisions involved her having a student explain why he had used a certain note in his composition.

Most of Lillian's thoughts were self-evaluative and all concerned instruction. Many comments dealt with appropriate strategies which should have been used in the lesson. Speaking of one of these, she said: "I should have had the student compose three more phrases and then try to join them to a whole song and have the other students put up their hands at the end of the phrase." When asked about the content structure of "phrases," she seemed secure about the context in which she had presented the concept and also in which direction the discussion of the concept was leading. Even though she acknowledged that the instructional strategies she used were faulty, she insisted (correctly) that her delivery system of simplifying the language and using the "spring" theme was effective.

Effects of Goal Setting

Lillian's use of the above behaviors had the following effects on classroom events. In the sectionals, Lillian increased drill time and maintained the same activities time thus decreasing the amount of time spent in classroom management. In full-rehearsal, she doubled the drill time, and decreased the activities time, thus increasing the time spent in classroom management from zero to five minutes. Lillian asked four questions in the sectional pre-test and four in the post-test. In the full-rehearsal pre-test, she did not ask any questions but asked seven product questions in the post-test. In the post-tests for both classes, Lillian was successful in asking a number of different students to respond, in giving clues to improve responses, and in accepting students' comments and ideas. (Unfortunately this data was not collected in the pre-test).

The Instructional Behavior Evaluation (see Appendix P) indicates that Lillian, unlike her Group A peers who they rated higher, thought the treatment behaviors were moderately effective (a rating of 2 or 3) in assisting her to select goals and objectives, in developing instructional strategies, in organizing classroom discipline, in developing materials and activities, in planning with others, and in developing procedures and evaluation techniques. She also believed that the behaviors aided her slightly (this too was lower than her peers' rating) in motivating students, conducting small group activities, giving directions, questioning and responding, and utilizing audio-visual equipment.

Lillian was in the group which received verbal feedback. The researcher observed in the feedback sessions that Lillian was more concerned with her appearance than with the behaviors she was displaying. Fuller and Manning (1973) found this 'novelty' effect is present with many teachers who are young, attractive, verbal, intellectual and social as was Lillian. The researcher observed that in discussing instructional activities, Lillian was defensive about her behavior during feedback. This led her to express contradictory views about the behaviors in the stimulated interview and her behavior was observed to reflect these contradictions. This in turn produced inconsistent effects in the Melab classes. Confusion was noted concerning content sequencing in the stimulated recall as demonstrated by the fact that Lillian continually changed goals within class activities. This reflected a lack of clarity about goal formation and the activities needed for attaining them which indicate problems in goal formulation.

Effects of Feedback

In discussing the appropriateness of the suggested behaviors, Lillian indicated that they were only slightly effective in their underlying principles, clarity, usefulness, interest and structure. She indicated that she had learned a moderate amount (a rating of 2) in the lectures, the microteaching sessions, and as a result of using the behaviors in Melab. (The other subjects had given these a rating of 1).

She found the feedback sessions to be helpful for lesson planning but believed that the lectures and microteaching sessions were too rushed. She suggested that the researcher in future provide typed lecture notes for the students. All things considered, Lillian believed the instructional model to be good (a rating of 2).

Lillian's teaching performance demonstrated the following stylistic changes. She rated only average or below on the behaviors of withitness and overlappingness in the pre-tests for both groups but became very successful in these in the post-tests. She was only moderately successful in persuasiveness in the pre-tests for both groups but became very successful in the post-tests. The behaviors of warmth and empathy rated above average for the pre- and post-tests for both classes. It is evident from the following summary that Lillian benefited only to a limited degree from verbal feedback.

1. The problems associated with content sequencing and instructional decisions indicate that she had problems in goal formulation.
2. Her teaching performance on most of the behaviors improved except for those dealing directly with instructional strategies.
3. Because her use of the behaviors was not consistently effective, both negative and positive effects occurred in the classroom events, while in sectionals it increased.
4. Some contextual cues prevented Lillian from benefiting completely from the treatment as evidenced by her mentioning that the treatment was too rushed.

5. Another area in which this treatment resulted in improvement was in her overall teaching style.

Post Hoc Analysis

The effects of feedback were presented in two sections: the discussion for each subject was presented in this chapter, Effects of Feedback, and the discussion for Groups A and B was presented in Chapter IV - Question 3. However, a related question of interest is:

What factors seem to control behavior in each subject?

To answer this question, a short summary of each subject's planning processes is discussed below.

Denis: In the section Effects of Goal Setting (in this chapter), evidence was given indicating that Denis had problems with goal setting which were attributed to his unplanned delivery system and content sequencing in his lessons. In addition, teaching style behaviors were rated lower in the post-test for the Melab lesson which in turn produced adverse results in the classroom. The researcher attributes this failure of goal setting to Denis not attending to the relevant cues provided in the modelling procedure and his lower scores on withitness in his instruction. His lack of attention to modelling cues is reinforced by the fact that he did not answer the evaluation questions involving modelling techniques at the end of the treatment. In addition, he failed to attend lectures on several occasions and needed reminding about the microteaching times. His unawareness of the happenings in class was demonstrated by the fact that all his interactions with the pupils had been unplanned; he had not used students' ideas in class, and in the stimulated recall interview, he noted that he had not used praise with the students. In conclusion, Denis' unorganized patterns of behavior in the classroom can be attributed to his not attending to both the modelling cues present in lectures and the student cues present in his teaching.

Margaret: From the Effects of Goal Setting discussion, evidence was presented indicating that Margaret had problems with goal setting which were attributed to her planning processes of interactions. Although Margaret acted upon student interactions, she had not previously made any decisions about class interactions. As a result, the lesson often took off on tangents that Margaret had not anticipated. In addition, even though there is evidence to suggest that Margaret did sufficiently attend to the modelling procedures used in lectures, she did not respond adequately to written feedback. However, all evidence indicates she would have responded to another type of feedback since she did try to implement all the behaviors suggested. Fuller and Manning (1973) suggest if feedback is accompanied by peer or supervisor intervention, behavior change is more likely to occur.

Reiner: From the Effects of Goal Setting discussion, evidence was presented indicating that Reiner had problems with goal setting which were evidenced by his unplanned content structure and sequencing. Even though Reiner was an excellent musician, he had problems with his understanding of musical content. As a result, he failed to sequence concepts or activities in directions which his pupils could understand. That Reiner did attend to the modelling cues presented in the treatment was reinforced by the fact that he indicated he had learned a great deal in this area at the end of the treatment. As in Margaret's case, perhaps verbal feedback could also help clarify certain misunderstandings that Reiner had about music concepts. In conclusion, Reiner's inappropriate teaching behaviors stemmed from his lack of understanding of musical concepts and his inability to attend sufficiently to the cues provided in written feedback.

Lori: From the Effects of Goal Setting discussion, evidence was presented indicating that Lori had problems with goal setting which can be attributed to her uncertainty about content structure and sequencing. In her instruction, Lori was effective in her demonstrations, strategies, and delivery system in both Melab pre- and post-tests. Lori's major subject area was English which can account for her uncertainty in the music area. Because of her content and structure uncertainty her class momentum and smoothness behaviors were rated low. In addition, Lori did not attend to the written cues provided in the feedback since many of her behaviors were rated lower in the post-test. However, all evidence indicates that if verbal explanation could have been given to aid her understanding of certain music concepts, she would have attained higher scores. In conclusion, most of Lori's inappropriate teaching behaviors resulted from her lack of musical understanding and the ineffectiveness of written feedback.

Tom: From the Effects of Goal Setting discussion, evidence was presented indicating that Tom had few problems in the planning process of goal setting. Tom's decisions dealing with content, sequencing, strategies and delivery system were planned even though his interactions were unplanned. However, since he seemed secure in his lesson planning, he was able to employ satisfactory strategies during unplanned interactions. In addition, he seemed very secure about his content structure which he satisfactorily justified during the stimulated recall interview. Since the behaviors and classroom event times all improved from the pre- to the post-test, it is possible to conclude that Tom had few problems in goal setting. Because of his adequacy of planning and his high ratings on the behaviors and classroom events, it is evident that the verbal feedback was beneficial to Tom.

Renate: From the Effects of Goal Setting discussion, evidence was presented indicating that Renate had few problems in the planning process of goal setting. In addition, her decisions involving instructions and interactions were planned, as were her prior goals, strategies, delivery systems, and content and sequencing. With the high ratings on the behaviors, Renate also obtained desirable results in the classroom events. From her statements regarding the benefits of verbal interaction between the supervisors and peers (indicated on the evaluation form), it is possible to conclude that Renate's behavior change and adequate planning resulted from this interaction.

Larry: From the Effects of Goal Setting discussion, it was concluded that Larry had few problems in the planning process of goal setting. He adequately planned his goals, strategies, delivery system, content and sequencing. In addition, his decisions regarding instructional methods and interactions were also appropriate. Since all ratings on behaviors and classroom events were considerably higher in the post-test, it can be concluded that verbal feedback aided Larry in his planning processes and his behavior changes. However, it is of interest to note that Larry believed the treatment to be good (a rating of 2). This suggests that even though Larry's behavior change was advantageous for the classroom, he stated that he considered behaviors unrelated to the treatment to be more desirable (e.g. high school band techniques).

Lillian: (A unique case) From the Effects of Goal Setting discussion, evidence was presented that Lillian had problems in goal formation. Problems in this area added to Lillian's inability to plan adequately; she did not plan appropriate strategies or goals in her lessons. Evidence also indicated that Lillian had problems associated with relating the modelling cues presented during the treatment. However, despite these problems associated with planning and modelling, Lillian improved satisfactorily on most of her behaviors and also improved her classroom management time. However, there were inconsistencies noted in Lillian's instructional strategies and classroom event times. It is therefore evident from these findings that Lillian's behavior changes were only affected by the verbal feedback to a limited degree; also, evidence suggests that Lillian did not attend to the modelling cues and the verbal comments offered by the supervisor. One reason for Lillian's limited performance is offered by Bandura (1974) who refers to the limited acquisition of modelled behavior if a subject does not identify with the model. In addition, Lillian's defensive behaviors may have a psychogenic base.

CHAPTER VI

CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

There are two main areas of investigation in the present study: the primary area is concerned with the effects of microteaching, using modelling and feedback, on the acquisiton of teaching skills; the secondary area, with the effectiveness of 'direct instruction' behaviors for secondary music classes.

The findings reported above (Chapters IV and V) support tentative conclusions. Results for the main area of investigation are summarized and described below under the headings: Microteaching, Modelling, and Feedback.

In the secondary area the methods for investigating the effects of direct instruction on the children are firstly, a compilation of the time spent on the various class activities in instrumental full-rehearsal and sectional music classes, and secondly, the percentage of engagement time. The findings for this part of the investigation are summarized under Direct Instruction below.

Investigation of the pre-service teachers' thought processes in planning for direct instruction are also summarized as part of the secondary purpose of the study. The findings for this part of the investigation are summarized under the headings of Direct Instruction and Planning Processes.

Conclusions

Conclusions are presented under the following headings: Microteaching, Modelling, Feedback, Direct Instruction and Planning Processes.

Microteaching

The results are based on information obtained from the experimental and pre-post test investigations. Analysis of microteaching suggested that it seemed an effective procedure for training in teaching skills.

1. All eight subjects in the experimental group benefited in the actual classroom setting by having practised and received feedback on teaching behaviors in a simulated class setting. The advantages of using microteaching (practising behaviors in a small class setting) was noted on the evaluation, and all subjects also demonstrated improvement on behavior ratings in the post-test. This appears to support previous research that practising behaviors and receiving feedback enables students to learn and transfer teaching behaviors to actual classroom settings.
2. It seemed evident that sequencing lesson behaviors from beginning-to-end and subsequently practising them in succession enables skills to be effectively dealt with during microteaching since the results revealed higher ratings in all skill categories. Therefore, it was found that classifying the behaviors into the following areas enables better student learning: beginning-of-the-lesson behaviors, middle-of-the-lesson behaviors, teaching style, and interaction behaviors. From this it appears that the earlier research, in which there was no behavior sequencing and the success of microteaching was limited to only a few behaviors, was faulty.

3. Prior to the present study the effectiveness of microteaching using direct instruction behaviors had been established for elementary mathematics and reading classes; however, this study found microteaching with direct instruction also appropriate for training music teachers in instructional behaviors, as evidenced by the experimental groups' increased class engagement times. This finding tends to indicate that mathematics and reading teaching behaviors are similar to music teaching behaviors in that the goals are formulated and learning outcomes are obtained by repetition and drill.

Modelling

Both the observed obtrusive effects in the classroom and the analysis of the SRI (stimulated recall interviews) content (i.e., restricted to planning) preclude the drawing of generalizations beyond the pre-service teachers involved in the present study. The pre-post test design and the lack of a control situation are additional limitations in the modelling treatment. The following conclusions, therefore, must be regarded in light of the above qualifications.

1. The differences between the pilot and the final study training procedures suggest that modelling-intended teaching behaviors are desirable. It was found that when the supervisor modelled the behaviors in succession and in contexts similar to those in which they were to be presented, the subjects obtained higher behavior ratings. This finding is in agreement to earlier findings in modelling.

2. Similar research relating the benefits of model identification have also been substantiated in the present investigation. The subjects' evaluation statements indicate their positive association with the model (supervisor) and the SRI yielded information regarding the behavior change benefits incurred from this association.
3. Earlier research confirmed the advantages of using peers as models of appropriate behaviors; however, this was not substantiated in the present study since the pilot findings revealed that the group using peer and supervisor modelling had no greater behavior gains than the supervisor only group.
4. Bandura's theories for modelling appear to be beneficial for training teaching behaviors since all subjects obtained behavior gains. This procedure includes: exposing the skill's essential features, studying its principles, videoviewing with active student participation, and practising the skill in a teaching context similar to that which was demonstrated.
5. It appears that when the behaviors to be learned are numerous and complex, both modelling and appropriate feedback may be needed for significant behavior changes. Group C, which received no feedback, did not obtain the behavior gains achieved by Group A and Group B. However, when inappropriate (written comments) feedback is used, it appears that modelling only is more effective since Group B (written comments feedback) behavior scores in

some cases declined, whereas Group C (modelling with no feedback) stayed the same.

6. All groups received adequate modelling and this produced beneficial class changes in Melab in each case. All groups increased the time spent on drill, and decreased classroom management time. This again appears to support the notion of using an appropriate modelling procedure in order to change behavior.

Feedback

The results are based on data obtained from the experimental and SRI (stimulated recall interviews) investigations. Feedback is desirable when the skill is complex and is to be meaningfully learned (see page 45).

1. Group A which received appropriate feedback improved on twenty-four behaviors (eleven significantly) and as such was better than Group B and Group C who exhibited fewer behavior increases. This supports the desirability of using supervisor verbal feedback rather than supervisor written comments.
2. That the supervisor's use of verbal comments facilitated the learning of planning processes is evidenced by the fact that all members of Group A appeared to have fewer problems with goal setting, and they appeared better organized in content structure, procedures, and sequencing. It appears that when subjects had an opportunity to discuss planning procedures (Group A) fewer problems resulted,

as opposed to those who did not have this opportunity (Groups B and C).

3. Given appropriate (i.e., verbal) supervisor feedback, pre-service teachers demonstrated positive behavior changes and more effective teaching style, produced more academically engaged minutes in their classes and displayed the ability to plan more adequately.
4. In support of earlier research in this area, the use of direct instruction feedback had the greatest affect on the time spent on activities and the number of product questions used in classroom interactions.
5. Supervisor's verbal feedback appeared to be especially valuable in aiding pre-service teachers to plan adequate goals and strategies. With written feedback, the supervisor could not help the subjects to plan adequately in the following areas: content structure, content sequence, interactive decisions, goals, strategies, delivery system and student needs. These results appear to be new findings in this area.
6. Pre-service teacher perceptions regarding the adequacy of feedback are not always correct. Both experimental groups believed the feedback they received was beneficial, but this was not correct. Group B (written comments), showed substantial decreases after feedback on teaching style behaviors, whereas Group A (verbal comments) scores increased on the same behaviors.

7. Although supervisor feedback was advantageous in aiding in interactive decisions (see page 52), the fact that only one of the experimental subjects seemed to be able to plan interactive decisions, supports similar findings as to the benefits of using other types of training devices (e.g., microteaching).

Direct Instruction

The results concerning direct instruction behaviors for different music contexts were obtained from both experimental and pre-post test investigations. The Melab observations revealed the following information about the use of 'direct instruction' behaviors for secondary music classes.

1. As with Rosenshine's (1979) findings, the present study also found that subjects who obtained high ratings on the instructional behaviors also obtained high teaching style behavior ratings and high class engagement times. Since Group A had the highest ratings in all three categories, it may be that teachers who exhibit superior instructional and teaching style behaviors do, indeed, produce higher class engagement times.
2. The high class engagement time results suggest that half the available class time should be spent on drill, and one quarter of the time on activities, and that product questions, praise and feedback should be used. These appear to be new findings in music classes.

3. That the behaviors seemed more effective for large groups than for small groups was evidenced by the fact that in the full-rehearsal and general music classes subjects demonstrated significantly more behavior increases than in the sectional classes. This finding agrees with Rosenshine's (1977) finding that direct instruction is more effective for large groups than for small groups. The goals for large group instruction coincide with 'direct instruction' teaching in that the purpose of both is moving the students as efficiently as possible through the materials.
4. Unlike the Texas Junior High Study, Evertson and Brophy (1978), the present study did not find that sustained questioning (i.e., process questions) produced any substantial differences in class engagement times. In fact, in the case of Group B, where more process questions were asked, the class engagement times were relatively low. It may be that in instrumental music classes, the time spent on drill and activities is more advantageous than time spent in question and answer periods.
5. The most successful pre-service music teachers (i.e., those having the highest behavior ratings) were similar to the Texas study junior high mathematics teachers in that both were found to be business-like and authoritarian. The commonality of the subject matter between music and mathematics (i.e.,lesson pacing is continuous, more homework [practise] is assigned, development of skills is

important, teacher demonstrations are important) may account for the similarity between both groups of teachers.

6. Similar to findings on direct instruction in other content areas, the present study found the high proportion of class activity time and the use of product questions (c.f., process questions) advantageous for music classes.
7. Information obtained from the evaluation questionnaires revealed the following about the behavior beliefs of the experimental subjects. All except two of the subjects indicated the behaviors to be very useful for instruction in selecting goals and objectives, organizing classroom discipline, developing materials and activities, motivating students, questioning and responding, utilizing audio-visual equipment, planning with others, and developing evaluation techniques. All but one subject indicated the behaviors to be especially valuable for selecting instructional strategies and conducting small group activities.

Planning Processes

Information obtained from the stimulated recall interviews with the pre-service teachers revealed descriptions about instructional planning.

1. In accordance with Fuller and Manning's review (1973) on the tension-equilibilization theory (i.e., self-evaluation causing enough dissonance to warrant change), the subjects

who were able to discuss their performances with the supervisor (verbal feedback) were better able to plan adequate goals, strategies, delivery, content structure and sequence. The subjects who were not given this opportunity (written feedback) encountered goal setting problems in one or more of the above planning areas.

2. The present study found that with the aid of verbal feedback the subjects' intended and observed teaching behaviors were congruous. However, when written feedback was used this was not the case. In fact, it was found that significantly more planned behaviors were actually implemented in Group A (verbal comments) than in the other groups.
3. The subjects who had fewer problems with planning also obtained higher teaching style ratings, whereas Group B and Group C subjects who had problems in planning were rated lower on the same teaching style behaviors. It may be concluded therefore that planning and teaching style behaviors are directly associated.
4. It was found that subjects who viewed their video teaching performances subsequently improved in formulating instructional decisions, but not in decisions regarding interactions. It would appear that another method is necessary for providing adequate training for decisions involving interactions.
5. Subjects seemed better able to judge their own instructional behaviors when they viewed their own teaching performance and compared their performance to the model

demonstrations presented in lectures. Again, this reinforces the importance of model demonstrations in aiding the change process.

6. The stimulated recall interviews were especially helpful in aiding subjects to isolate particular weaknesses encountered in their planning of content structure, sequencing, strategies, or goals.
7. The present study also found that most of the pre-service teachers' problems in planning were concerned with content structure, sequencing and assessing student needs. These findings appear to be new in this area.
8. All except one of the subjects who were given verbal feedback seemed to have meaningfully (see page 45) learned their behaviors since there were subsequent increases in each of their teaching style ratings. However, in Lillian's case, the behavior seemed only to be rote learned possibly due to planning problems. Even though her teaching style behaviors were rated higher in the post-test, her inconsistent instructional behaviors produced lower academic engagement times for the class. It appears that when behaviors are rote learned (e.g., Lillian's case), the effects are not favorable. This seems to be a new finding in this area.

Implications and Recommendations

The results of the present study have implications and suggest recommendations for teacher education, in-service education, and other areas of research. The limitations involved in this study, namely the small number of subjects, the limited number of observations, the selected number of interviews, and the random selection of lessons, preclude the drawing of generalizations beyond the pre-service teachers involved in the present study. The effects of the coder in the observed classroom, the relationship of the interviewee to interviewer, and the coder's perception of in-service and pre-service teaching behaviors, may have singly or collectively served to generate anxiety or produce concern regarding teaching strategies, discipline, or control.

Therefore, the following conclusions must be regarded in the light of the above limitations.

Teacher Education

1. The use of the 'direct instruction' model is beneficial for training in music teaching behaviors for secondary, general music and full-rehearsal classes.
2. The 'direct instruction' behaviors are important for keeping classes on-task for longer periods of time. These findings on the positive relationship between behaviors and student on-task time provide useful information not only for practitioners in teacher education, but also for music educators as well.
3. The SRI's revealed valuable information about the subjects' intended behaviors, instructional decisions and

self-evaluation. This information was valuable in assessing the subjects' information processing system and in determining their teaching actions.

4. The stimulated recall interview was very effective for revealing information about the pre-service teachers':
   (a) intended behaviors
   (b) planning constructs
   (c) decisions regarding instruction
   (d) criteria for self-analysis

In-Service Education

Borg (1970) and Young (1980) have alluded to the importance of different training procedures with pre- and in-service teachers. Young's description of in-service education includes, among other things, improvement in the professional knowledge and skills of a teacher. He advocated research in the areas of adult learning, change processes, and helping relationship and alludes to the importance of these for successful training in in-service education. Since the present study is concerned with the change process and teaching skills (pre-service and in-service), the following implications are noteworthy.

1. Although microteaching was appropriate for the training of pre-service teachers, this method of aided feedback (i.e., supervisor) is not recommended for the training of in-service teachers. Other training methods recommended for in-service teachers include role-playing, videotape discussions, problem situation demonstrations and practical presentations.

2. Teaching style behaviors and interaction behaviors can be improved through in-service programs. Although these behaviors pre-suppose knowledge characteristic of experienced teachers, the CRT results revealed that they improved significantly with training.
3. The results of the CRT Quest Project provide evidence of significant relationships between teaching strategies and pupil achievement. (See MacKay, CRT Report No. 79-1-3, 1979b).

Areas of Research

The results of the present study have a number of implications for stimulated recall and music education studies.

1. Stimulated Recall Studies: Since few studies have investigated pre-service teachers' information processing during planning, it is suggested that further studies are required to investigate (1) variations in teacher planning styles of information processing, and (2) the content of the information they process. This type of investigation should address itself to the following needs:
    - (a) The need to refine further the videotaping procedures so as to capture both the teacher and pupil verbal classroom interactions. In addition there is a need for further refining of the content analysis procedures so as to interpret the nuances of teachers' descriptions of content characteristics.

   (b) The need for longitudinal studies to gather data concerning teacher information styles in music. Also in depth case studies dealing with how teachers process this information in various music classes would be valuable.
   (c) The need to conduct stimulated interviews with music teachers in different classes and to explore in-depth relationships of planning to the instructional process.
   (d) The need for further investigation into teacher self-monitoring which Good and Brophy (1973) found to be one indicator of teacher effectiveness.
2. Music Education Studies: As one of the few research studies on pre-service music teachers' behavior and planning thought processes, the present study offers insights into teaching behaviors which are effective for secondary music teaching, and gives some evidence indicating how pre-service teachers formulate and implement these behaviors. The richness of the data and the exploratory nature of the study have revealed a number of prospective research directions.
   (a) There is a need for case studies which examine the relationship between teacher understanding of music, teacher objectives in music education, and interactive decision making.
   (b) There is a need for longitudinal studies which examine pupil and teacher perceptions of the instructional processes in music, and their respective awareness of lesson objectives.

(c) There is a need for studies which provide evidence of significant relationships between behaviors and other phenomena in music instruction and pupil achievement, engagement times or other product measures.

(d) There is a need for more refined research techniques for time on-task studies which, with the aid of stimulated recall, would investigate pupil information processing for a specified duration in music classes.

(e) There is a need to investigate further pre-service teachers' thought processes, beliefs, and principles during music instruction.

(f) There is a need to refine further the specific behaviors needed for teaching different music contexts. It is suggested that music pre-service educators further refine the content of the music to be taught before applying the appropriate teaching behaviors.

(g) There is a need to investigate the effect of direct instruction in different music classes with different kinds of students. The question still remains: for what educational outcomes and for what kinds of students is direct instruction more effective?

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1. Explaining
2. Introductory Procedure and Closures
3. Questioning and Advanced Questioning
4. Reinforcement
5. Variability

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APPENDIX A

MANHATTANVILLE TEACHING EVALUATION FORM

Appendix A

Manhattanville Teaching Evaluation Form

Student's Name: ______________________ Evaluation: ______________

		Very Satisfactory	Satisfactory	Unsatisfactory
INTRODUCTION	1. How effectively did the teacher's method of introducing the lesson help students become interested in the main body of the lesson?			
	2. How well were the goals set for the total class group?			
	3. How effectively did the teacher give guidelines or cues in the introduction which were helpful in understanding the lesson?			
	4. How effective was the relationship or connection between the introduction and the body of the lesson?			
BODY	5. How effectively was the content related to the aims and teaching method of MMCP?			
	6. How effectively were the teacher's question-answer discussions in promoting discovery learnings by the students?			
	7. How good were the personal relations between the pupils and the teacher?			
	8. How well did the teacher vary the kind of participation required by the pupils?			
	9. How effectively was the ending of the body related to the closure of the lesson?			
CLOSURE	10. How well did the teacher round off the lesson by summing up progress and displaying the work of the groups?			

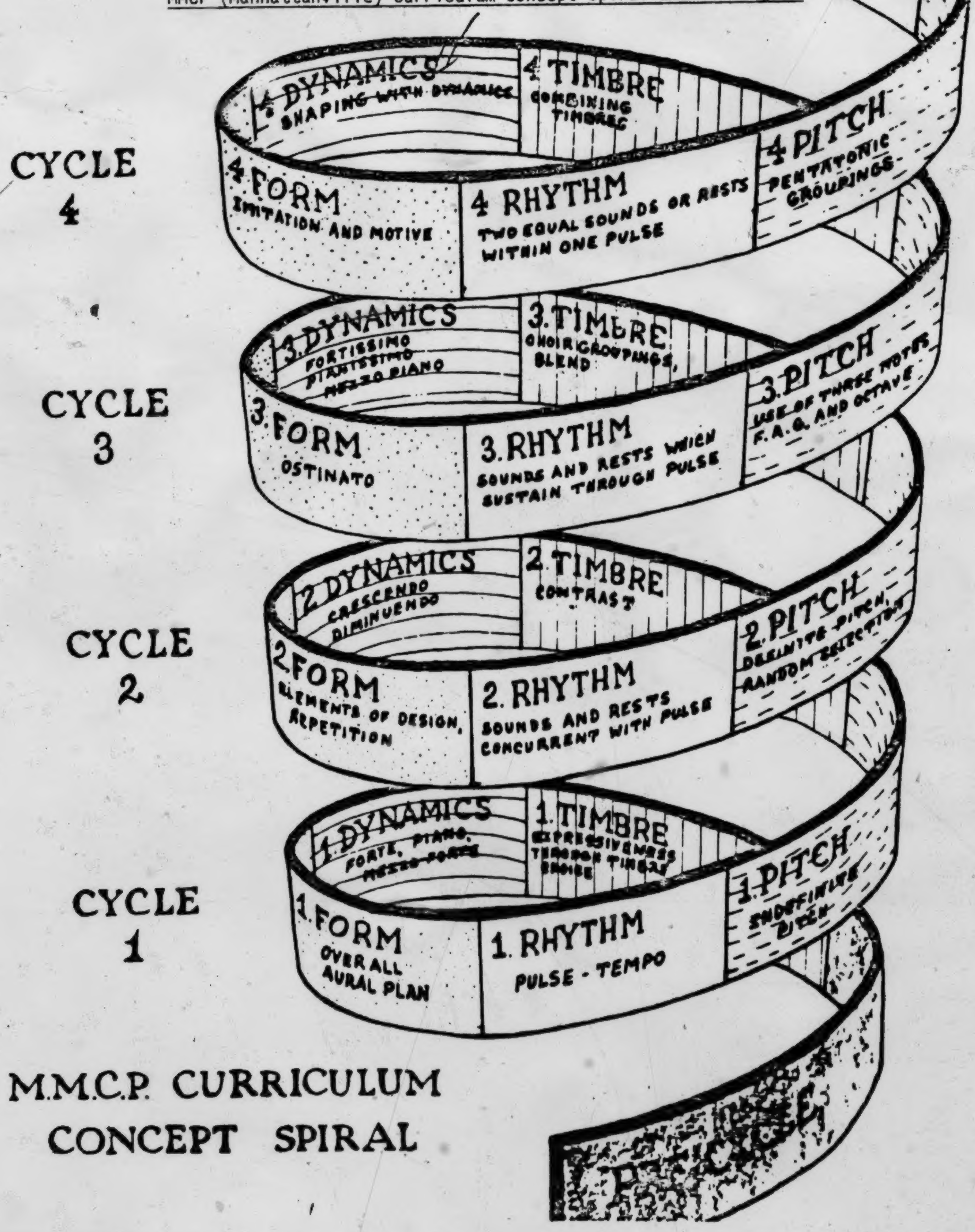
To satisfactorily complete this session, a student must gain a minimum of 6/10.

APPENDIX B

MMCP (MANHATTANVILLE) CURRICULUM CONCEPT SPIRAL AND STRATEGIES

Appendix B

MMCP (Manhattanville) Curriculum Concept Spiral and Stretegies


CYCLE 4
4 DYNAMICS
SHAPING WITH DYNAMICS
4 TIMBRE
COMBINING TIMBRES
4 PITCH
PENTATONIC GROUPINGS
4 FORM
IMITATION AND MOTIVE
4 RHYTHM
TWO EQUAL SOUNDS OR RESTS WITHIN ONE PULSE
CYCLE 3
3. DYNAMICS
FORTISSIMO
PIANISSIMO
MEZZO PIANO
3. TIMBRE
CHOIR GROUPINGS, BLEND
3. PITCH
USE OF THREE NOTES F.A.G. AND OCTAVE
3. FORM
OSTINATO
3. RHYTHM
SOUNDS AND RESTS WHICH SUSTAIN THROUGH PULSE
CYCLE 2
2. DYNAMICS
CRESCENDO
DIMINUENDO
2. TIMBRE
CONTRAST
2. PITCH
DEFINITE PITCH, RANDOM SELECTION
2. FORM
ELEMENTS OF DESIGN, REPETITION
2. RHYTHM
SOUNDS AND RESTS CONCURRENT WITH PULSE
CYCLE 1
1. DYNAMICS
FORTE, PIANO, MEZZO FORTE
1. TIMBRE
EXPRESSIVENESS THROUGH TIMBRE CHOICE
1. PITCH
INDEFINITE PITCH
1. FORM
OVERALL AURAL PLAN
1. RHYTHM
PULSE - TEMPO
M.M.C.P. CURRICULUM
CONCEPT SPIRAL

Cycle 1.

TIMBRE

The quality or color of sound, the timbre, is a major factor in the expressiveness of music. The timbre may be shrill, intense, dulcet, silvery, nasal, smooth, bright, or dull. Choosing the timbre which best expresses what the composer has in mind is one of many decisions which he must make when creating music.

DYNAMICS

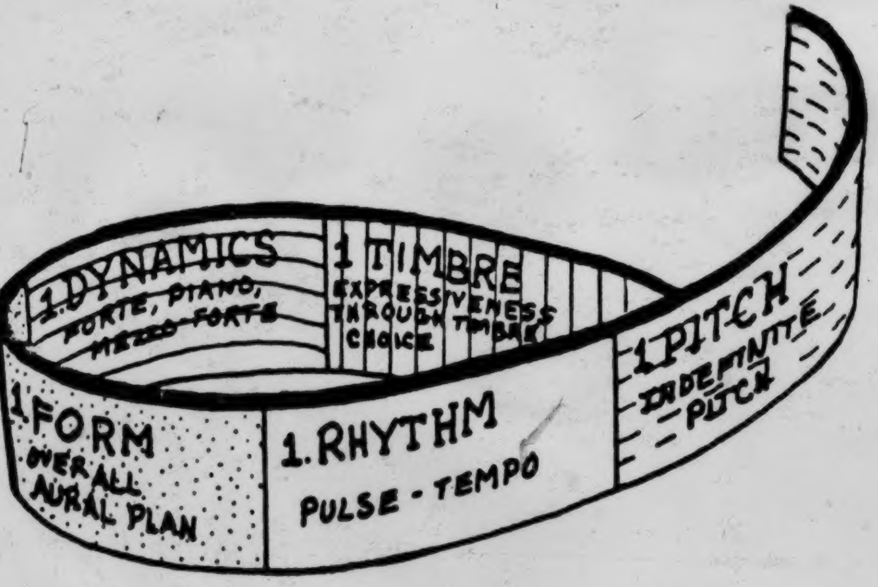
The degree of loudness or softness, the volume or the dynamics of the sound, also must be determined by the composer. Music may be loud, forte (f), soft, piano (p), or medium-loud, mezzo-forte (mf). The volume of the music or any one part of the music will affect the total expressive result.

PITCH

The comparative highness or lowness of sounds is also determined by the composer. Initially, his choices will deal with sounds of indefinite pitch such as those produced by a triangle, a cymbal, a drum, etc. In such cases, highness or lowness often depends on preceding and/or following sounds. (A cymbal sounds low after a triangle but high after a large drum.)

FORM

The plan, the shape, the order, the form of a piece of music is another determination made by the composer. Form refers to the aural design, the way the sounds are put together. The composer's plan or form is based on his expressive intent.


1 DYNAMICS
FORTE, PIANO,
MEZZO-FORTE
1 TIMBRE
EXPRESSIVENESS
THROUGH TIMBRE
CHOICE
1 PITCH
INDEFINITE
INDEFINITE
PITCH
1 FORM
OVERALL
AURAL PLAN
1. RHYTHM
PULSE - TEMPO

RHYTHM

Tempo is that characteristic of music which makes it appear to go fast or slow. The pulse is the underlying beat (sometimes not heard but only sensed) that may help to create a feeling of motion in music. These items are the choice of the composer.

Sample Strategy

Cycle 1.

The degree of loudness or softness, the volume or the dynamics of the sound, will affect the total expressive result.

Using the entire class as performers on object instruments, volunteer students will conduct an exploratory improvisation to investigate the effects of: sounds used singly, sounds used in combination, and dynamics. It is suggested that before the improvisation the volunteer conductors choose 3 or 4 students who will play singly when directed. Conducting, cues for entrances and exits should also be established.

Tape the exploratory improvisations for immediate playback and evaluation. Discuss all perceptions verbalized by the students. Extend the discussion by including the following questions:
How did volume or dynamics affect the total result?
Can all of the object instruments be heard at an equal level of volume when performed in a group.

Groups consisting of 4 or 5 students will plan an improvisation. Focus attention to the quality of sounds used singly, the quality of sounds used in combination, and the expressive use of volume. Consideration for the overall shape of the piece should also be a concern.

Following a short planning and practicing period (about 10 minutes), each group will perform the improvisation for the class.

Tape the improvisations for immediate playback and evaluation. Discuss students' comments as they relate to the improvisations. Extend the discussion by focusing attention on the following questions:
What degree of loudness or softness was used most frequently by the performing groups?
Did the improvisations have an overall shape or design?

Summarize the discussion by introducing forte (f), piano (p), and mezzo-forte (mf). In listening to the recorded examples ask students to identify the dynamic level used most frequently by the composer.

Did you get any musical ideas from this composition that you might be able to use?

Suggested Listening Examples:
- Parade - Gould, Morton; Columbia CL 1533
- Te Deum, Judex Crederis - Berlioz, Hector; Columbia ML 4897
- Prélude à l'Après-midi d'un faune - Debussy, Claude; London LS 503

APPENDIX C

PILOT TRAINING FORM

Appendix C

Pilot Training Form

	Very Good	Good	Average	Below Average	Poor
SET					
Interest					
1. The method of introducing the lesson was in itself interesting.					
2. The method of introducing the lesson helped the pupils become interested in the main part of the lesson.					
Cognitive Link					
3. The relationship between your introduction and the main part of the lesson was clear to the pupils.					
FRAMES OF REFERENCE					
Aims					
4. The specific instructional materials were related to experimentation and discovery of the MMCP method.					
5. The teacher's questioning encouraged discovery by the students.					
Implementation					
6. The personal relationships between pupils and teacher was harmonious.					
CLOSURE					
7. The method of ending the lesson reinforced the pupil's interest in the lesson.					
8. The method of ending created a sense of achievemant for the pupils.					

APPENDIX D

PROJECT QUEST: TEACHING STRATEGIES

Appendix D

Project Quest: Teaching Strategies

Behavior Management and Classroom Discipline

R* 1. Teachers should use a system of rules dealing with personal and procedural matters.

R 2. Teachers should prevent misbehaviors from continuing.

R 3. Teachers should direct disciplinary action accurately.

R 4. Teachers should move around the room a lot (monitoring seatwork).

R 5. Teachers should handle disruptive situations in a low key manner (non-verbal, proximity, eye contact).

R 6. Teachers should insure assignments are interesting and worthwhile when children work independently.

R 7. Teachers should use a system of rules which allow pupils to carry out learning tasks with a minimum of direction.

R 8. Teachers should optimize academic learning time. Pupils should be actively involved and productively engaged in learning tasks.

R 9. Teachers should use a standard signal to get students' attention.

R 10. Teachers should not begin speaking to the group until all students are paying attention.

Instructional Methods

R 11. Teachers should use a variety of instructional techniques adapting instructions to meet learning needs.

E* 12. Teachers should use a system of spot-checking assignments.

E 13. Teachers should relate mathematics games and independent activities to the concepts being taught.

E 14. Teachers should use techniques that provide for the gradual transition from concrete to more abstract activities.

R 15. Teachers should use an appropriate mixture of high and low order questions.

Teaching Style

R 16. Teachers should be aware of what is going on in the classroom.

R 17. Teachers should be able to attend to more than one issue at a time.

R 18. Teachers should facilitate the smooth flow of the lesson or a smooth transition from one activity to another.

R 19. Teachers' behavior should maintain the pace of the lesson.

R 20. Teachers should be clear in presentations to the class.

R 21. Teachers should be able to motivate children.

R 22. Teachers should provide evidence of "caring," "accepting," and "valuing" of the children.

R 23. Teachers should respond accurately to both obvious and less obvious meanings, feelings, and experiences of the children.

Questioning and Feedback

R 24. Teachers should select many different pupils to respond to questions.

R 25. Teachers should use techniques such as rephrasing, giving clues, or asking a new question to help a pupil give an improved response when pupils' answers are incorrect or only partially correct.

R 26. Teachers should use praise to reward outstanding work as well as to encourage pupils who are not always able to do outstanding work.

R 27. Teachers should use mild criticism on occasion to communicate expectations to more able pupils.

R 28. Teachers should accept and integrate pupil initiated interaction such as questions, comments or other contributions.

*R - Research
E - Edmonton practitioners

APPENDIX E

INSTRUMENTAL INSTRUCTIONAL BEHAVIORS

Appendix E

Instrumental Instructional Behaviors

The following thirty-three behaviors deal with 'direct teaching' principles in an instrumental music rehearsal. The behaviors in this instructional guide are concerned with getting the students' attention and maintaining the students' interest through the use of pupil-teacher interaction. The behaviors center mainly on the organization and clarity of an effective rehearsal situation based on active student participation wherein small groups and individuals are engaged in a variety of learning activities. The behaviors are outlined in both general instructional behaviors and specific music behaviors, and are presented in a lesson format below.

I. Direct Instruction Behaviors

A. Getting the children's attention.

R* 1. Teachers should not begin speaking to the group until all students are paying attention.
R 2. Teachers should stop speaking or instruct a contributing student to stop speaking until all students are paying attention.

B. Introducing a lesson.

R 3. The teacher introduces the lesson with a brief overview.
OR* 4. The teacher presents the objective or new words to be emphasized clearly at the beginning of the band period.
R 5. After presenting the objective or new words, the teacher has the students note them.
OR 6. Teacher gives a demonstration or explanation preceding the children's attempt to do the work. This would include warm-up and technique exercises which help clarify the students' understanding of the objective.

C. Presentation of material.

R 7. Teachers should present information to students in a clear, orderly, well-organized manner. The teacher reviews at the beginning and as needed throughout the lesson; this supplies a review of past learning.

R 8. Teachers should communicate at the pupil's level of comprehension.
R 9. Teachers should use a variety of instructional techniques -- adapting instruction to meet the learning needs of individuals.
R 10. Teacher optimized academic learning time. Pupils should be actively involved and productively engaged in learning tasks.

D. Music instructional techniques.

OR 11. Teachers select repertoire material which is suitable to students' level of performance and understanding.
OR 12. The teacher puts the highlight or concept back in the repertoire with increased student understanding.

E. Summary of the lesson.

R 13. Near the end of the lesson, the teacher reviews the main ideas and essential content of the lesson.
R 14. The teacher develops an appropriate evaluation system either by proficiency level of performance or by written responses to check students' understanding.
R 15. The teacher displays or plays the work of the students and leaves them with a feeling of accomplishment.

F. Praise and criticism.

R 16. Criticism should be used with discretion and should include specification of desirable or correct alternatives.
R 17. Teacher directed disciplinary action accurately.
R 18. Teacher prevented misbehaviors from continuing.

II. Teaching Style Behaviors

QR* 19. WITHITNESS; Teacher was aware of what was going on in the classroom.

QR 20. OVERLAPPINGNESS; Teacher was able to attend to more than one issue at a time.

QR 21. SMOOTHNESS: Teacher facilitated the smooth flow of the lesson or a smooth transition from one activity to another.

QR 22. MOMENTUM: Teacher's behavior maintained the pace of the lesson.

QR 23. CLARITY: Teacher was clear in presentations to the class.

QR 24. PERSUASIVENESS: Teacher was able to motivate children.

QR 25. WARMTH: Teacher provided evidence of "caring," "accepting," and "valuing" of the children.

QR 26. EMPATHY: Teacher responded accurately to both obvious and less obvious meanings, feelings, and experiences of the children.

III. Interaction Behaviors

QR 27. Teacher should select many different pupils to respond to questions.

QR 28. Teachers should use techniques such as rephrasing, giving clues, or asking a new question to help the pupil to give improved response when pupil's answers were incorrect or partially correct.

QR 29. The teacher used praise to reward outstanding work as well as to encourage pupils who were not always able to do outstanding work.

QR 30. The teacher used mild criticism on occasion to communicate expectations to more able pupils.

QR 31. When pupils initiated interaction, the teacher should accept and integrate interaction such as pupil's questions, comments, or other contributions.

* R - Research
OR - Ottolene Ricord (present researcher)

QR - Quest Research

APPENDIX F

QUEST OBSERVATION SYSTEM

Appendix F

1

Quest Observation System

A joint project of the Centre for Research in Teaching and the Edmonton Public School Board. Winter 1978-1979.

Teacher ____________________

Booklet Identification Number ____________________

School ____________________

Month, Day, Year. ____________________

Grade ____________________

Time ____________________

Number of children enrolled ____________

Main Subject Content of Observed Lesson
____
____
____
____
____
____
____
____

Number of children present during observed lesson ____________

Total Class Duration

______ hour(s) ______ minutes

Start time ____________________

Finish time ____________________

Coder ____________________

2

I.D. N°. ____________

SKETCH OF THE CLASSROOM

I.D. N°. ____________ 3

CLASSROOM ACTIVITY DESCRIPTION

TIME	WHO	WHERE	WHAT

4

I.D. No. ____________

THREE MINUTE OBSERVATION SCHEDULE

start time ____________
finish time ____________

FEEDBACK ACADEMIC MANAGERIAL			Warn																		
			- -																		
			+ +																		
CHILD-INITIATED INTERACTION	TEACHER RESPONSE TO CHILD-INITIATED INTERACTION		Brief																		
			Long																		
			Redirect																		
			Shift																		
			Integrate																		
			Not Accept																		
			Accept																		
			Delay																		
			0																		
			- -																		
			+ +																		
	TYPE OF INTER-ACTION		Irrelevant																		
			Relevant																		
			Call Out																		
			Comment																		
			Question																		
TEACHER-INITIATED INTERACTION	TEACHER RESPONSE TO CHILD's ANSWER	SUS-TAIN-ING	Rep. Ch. Ans.																		
			New Q.																		
			Rep. Q. Clue																		
		TERMINAL	Ask Other																		
			Give Ans.																		
			Process																		
			Negate																		
			Affirm																		
			Ignore																		
			Criticise - -																		
			Praise + +																		
	QUALITY OF CHILD's ANSWER		Call Out																		
			No Response																		
			Don't Know																		
			Wrong -																		
			Partly + -																		
			Correct +																		
	PUPIL SELECT-ION		Call Out																		
			Volunteer																		
			Non Vol																		
			Pre Select																		
	QUEST-ION TYPE		Self Ref																		
			Choice																		
			Process																		
			Product																		
GROUP-ING MODE			Whole Class																		
			Large Gr.																		
			Small Gr.																		
			One Child																		
			Who																		

5a

I.D. N°·

HIGH INFERENCE CODING SHEET

1. Teacher used a system of rules dealing with personal and procedural matters.

1 2 3 4 5
LOW MED HIGH ____________ Not Observed

2. Teacher prevented misbehaviors from continuing.

1 2 3 4 5
LOW MED HIGH ____________ N. O.

3. Teacher directed disciplinary action accurately.

1 2 3 4 5
LOW MED HIGH ____________ N. O.

4. Teacher moved around the room a lot (monitoring seatwork).

1 2 3 4 5
LOW MED HIGH ____________ N. O.

5. Teacher handled disruptive situations in a low key manner (non-verbal, proximity, eye contact)

1 2 3 4 5
LOW MED HIGH ____________ N. O.

6. Teacher insured assignments were interesting and worthwhile while children worked independently.

1 2 3 4 5
LOW MED HIGH ____________ N. O.

7. Teacher used a system of rules which allowed pupils to carry out learning tasks with a minimum of direction.

1 2 3 4 5
LOW MED HIGH ____________ N. O.

8. Teacher optimized academic learning time. Pupils were actively involved and productively engaged in learning tasks.

1 2 3 4 5
LOW MED HIGH ____________ N. O.

9. Teacher used a standard signal to get students' attention.

1 2 3 4 5
LOW MED HIGH ____________ N. O.

I.D. N°. ____________ 5b

10. Teacher did not begin speaking to the group until all students were paying attention.

1 2 3 4 5

LOW MED HIGH ____________ N. O.

11. Teacher stopped speaking/instructing until all students were paying attention.

1 2 3 4 5

LOW MED HIGH ____________ N. O.

12. Teacher used a variety of instructional techniques adapting instruction to meet learning needs.

1 2 3 4 5

LOW MED HIGH ____________ N. O.

13. Teacher encouraged quantity and quality of work in Language Arts.

1 2 3 4 5

LOW MED HIGH ____________ N. O.

14. Teacher used a system of spot-checking assignments.

1 2 3 4 5

LOW MED HIGH ____________ N. O.

* (Do not complete until last minute.)

15. Teacher related math games and independent activities to the concepts being taught.

1 2 3 4 5

LOW MED HIGH ____________ N. O.

* (Do not complete until last visit)

16. Teacher increased the amount of written work so that pupils did some writing every day.

1 2 3 4 5

LOW MED HIGH ____________ N. O.

17. Teacher used techniques that provide for the gradual transition from concrete to more abstract activities.

1 2 3 4 5

LOW MED HIGH ____________ N. O.

5c

I.D. N°. ____________

18. Teacher used an appropriate mixture of high and low order questions.

1 2 3 4 5
LOW MED HIGH ____________ N. O.

19. Teacher was aware of what was going on in the classroom.

1 2 3 4 5
LOW MED HIGH ____________ N. O.

20. Teacher was able to attend to more than one issue at a time.

1 2 3 4 5
LOW MED HIGH ____________ N. O.

21. Teacher facilitated the smooth flow of the lesson or a smooth transition from one activity to another.

1 2 3 4 5
LOW MED HIGH ____________ N. O.

22. Teacher's behavior maintained the pace of the lesson.

1 2 3 4 5
LOW MED HIGH ____________ N. O.

23. Teacher was clear in presentations to the class.

1 2 3 4 5
LOW MED HIGH ____________ N. O.

24. Teacher was able to motivate children.

1 2 3 4 5
LOW MED HIGH ____________ N. O.

25. Teacher provided evidence of "caring", "accepting", and "valuing" of the children.

1 2 3 4 5
LOW MED HIGH ____________ N. O.

26. Teacher responded accurately to both obvious and less obvious meanings, feelings, and experiences of the children.

1 2 3 4 5
LOW MED HIGH ____________ N. O.

I.D. No. ____________ 6

NEW HIGH INFERENCE VARIABLES

Note: For the following items, please use the five-point scale to indicate how frequently the behaviors occurred during the period observed.

27. Many different pupils were selected by the teacher, to respond to questions.

1 2 3 4 5
LOW MED HIGH
____________ N. O.

28. When pupils' answers were incorrect or only partially correct, the teacher used techniques such as rephrasing, giving clues, or asking a new question to help the pupil to give improved response.

1 2 3 4 5
LOW MED HIGH
____________ N. O.

29. The teacher used praise to reward outstanding work as well as to encourage pupils who were not always able to do outstanding work.

1 2 3 4 5
LOW MED HIGH
____________ N. O.

2. The teacher used mild criticism on occasion to communicate expectations to more able pupils.

1 2 3 4 5
LOW MED HIGH
____________ N. O.

3. When pupils initiated interaction, the teacher accepted and integrated the pupil question, comment or other contribution.

1 2 3 4 5
LOW MED HIGH
____________ N. O.

7

I.D. No. ____________

INSTRUCTIONAL MATERIALS INVENTORY

(to be completed during the 7 minute phase)

Check ☑ if item was used during observed lesson.

GAMES, TOYS, PLAY EQUIPMENT

- ☐ puzzles, games
- ☐ story books
- ☐ animals, other nature objects
- ☐ other ____________

INSTRUCTIONAL MATERIALS

- ☐ text
- ☐ worksheet
- ☐ charts
- ☐ pictures
- ☐ film
- ☐ filmstrip
- ☐ other ____________

A. V. EQUIPMENT

- ☐ T. V.
- ☐ record player
- ☐ cassette tape player
- ☐ overhead projector
- ☐ other ____________

GENERAL EQUIPMENT

- ☐ children's own products display
- ☐ other displays for children
- ☐ magazines
- ☐ achievement chart
- ☐ sink
- ☐ arts and crafts materials
- ☐ blackboard
- ☐ feltboard
- ☐ easel
- ☐ other (please specify) ____________

APPENDIX G

GUIDELINES FOR INTERVIEWEE

Appendix G

Guidelines for Interviewee

In the stimulated recall session with the student or teacher, the role of the interviewer is to assist the student or teacher to recall and verbalize the covert thoughts and feelings experienced during the lesson which has been videotaped. To facilitate as complete, and as accurate recall as is possible, the interviewer must:

- try to establish a relaxed, friendly, supportive atmosphere prior to, and during the interview;
- try to facilitate and encourage self-discovery; it is important for the interviewee to believe that he/she is capable of telling about inner processes without the interviewer telling the interviewee what they were;
- avoid making interpretations of, and judgements about, what appears on videotape; ask questions requiring elaboration or clarification, but avoid questions answerable by "yes" or "no";
- assume a respectful set towards the student or teacher and the videotaped material; communicate to the interviewee that he/she is being taken very seriously;
- keep the student's or teacher's attention focussed on the T.V. image; refrain from unnecessary activity, as such activity may actually interfere with recall;
- encourage the interviewee to talk; don't have the student or teacher become so engrossed in listening to you that the person forgets what he/she is reliving; the interviewee is the authority - you are that

person's interested student;

- be patient; give the interviewee a chance to become involved in reliving the recorded lesson;
- immerse yourself in the interviewee's communication rather than trying to figure out what to say next;
- keep the student's or teacher's discussion focussed on what transpired in the actual videotaped lesson and, in particular, on the student's or teacher's covert-thoughts, feelings, and the sources of these; conscious decisions and reasons for making those decisions;
- ask probing questions to facilitate maximum disclosure by the student or teacher e.g.

  What were you thinking, feeling at that point?
  Why do you say, do....?
  Did you have any reasons for saying, doing....?
  Did you understand what the teacher was saying, doing....?
  What did you think the teacher was wanting, thinking,....?
  Can you recall any other kinds of thoughts you had?
  Were there any fantasies (day-dreams) going through your mind?
  Was there anything that you did not want to happen?
  Was there anything that you wanted to do at that time?

Note: Questions should be brief and should create an intense awareness in the student or teacher of him/herself. Avoid questions which are suggestive of, or imply criticism, incredulity, disagreement, disapproval, etc.

- check frequently that the student or teacher is differentiating between interactive thoughts and feelings and those subsequently formed.

APPENDIX H

MATERIAL TO BE PRESENTED TO, AND DISCUSSED WITH THE INTERVIEWEE (TEACHER)

Appendix H

Material To Be Presented To, And Discussed With The Interviewee (Teacher)

(Taken from Marland, 1977 and Cooper, 1979)

Introduction

During the past ten years "Teaching" has received increased emphasis from educational researchers. A number of researchers have maintained that research into teaching can only take place in the classroom and that through observation of the teacher's overt actions information can be gained that will assist in the development of theories of instruction. However, to more fully develop theories of instruction and improve teacher education and school curricula, researchers have also postulated the need to understand teachers' thought processes.

Objectives of the Research

At the present time very little is known about teachers' thought processes during instruction. These processes are the focus of interest of this research project. The objective of this research is to find out what information teachers use during instruction, why they use this information and how they process this information. The decisions teachers make and the reasons for those decisions is of special interest. How well the lesson was taught is NOT the focus of the interview.

Role of the Teacher/Interviewee

The method used in this research project to obtain data on teachers' information processing during instruction is called "stimulated recall."

Asking teachers to recall after a lesson the thoughts and feelings they experienced whilst actually teaching the lesson has not proved very satisfactory. Recall of thoughts and feelings is facilitated when teachers are shown a videotape of the lesson. Seeing events in the lesson on videotape helps to trigger or stimulate recall - hence the term "stimulated recall."

Whereas it is possible to have people in some professions "think out loud" about their professional duties because they are not interacting with other people, it is not possible to do this with teachers because it would interfere with the instructional process.

We know that the mind works faster than the voice. As teachers interact with children in the classroom they:

- become aware of many more classroom events than can be inferred from their verbal and overt non-verbal behavior;
- react to classroom events intellectually and emotionally in ways which even the most perceptive observer could not detect because they are internal. Many reactions, interpretations and diagnoses of pupil behavior are not revealed to the observer.
- make numerous decisions about what to do and say next or at some future point in the lesson, or what not to do or say. The alternative courses of action considered, the reasons for the final choice of action are frequently not declared or revealed; the observer is not privileged with this "inside" knowledge and with the various rationales used to make decisions.
- use many rules, principles and instructional strategies that the observer is not aware of.

As the teacher relives the lesson by viewing the videotape, he/she is invited to provide a detailed account, to talk aloud, about:

(a) thoughts, feelings, moment-to-moment reactions;

(b) conscious choices (i.e., when you chose to do or say one thing rather than other things, or when you chose to say or do nothing), the alternatives you considered before making a choice, and the reasons for choosing to do or say that particular thing.

Note: 1. You may stop and start the tape as often as you wish.

2. The interviewer may also stop the tape on some occasions to ask you if you can recall your thoughts, feelings, reactions, etc. in relation to certain classroom events.

3. The interviewer's role is simply to assist you to recall what you thought and felt during the lesson.

4. As you view the tape you will probably form new impressions of the lesson and of events which occurred during the lesson, and think of other things that you might have said or done. Try to distinguish during the interview between the thoughts and feelings you had during the lesson and those you had after the lesson or when watching the videotape; ensure that the interviewer is aware of the distinctions too.

If you have any questions, the interviewer will be pleased to discuss these with you prior to the interview.

APPENDIX I

STIMULATED RECALL - PRACTICAL AND TECHNICAL CONSIDERATIONS

Appendix I

Stimulated Recall - Practical and Technical Considerations

Rapport. In order to maximize the completeness with which the subject will report his thoughts the researcher must take positive measures to establish rapport based on communicated authenticity, regard for the other person and empathy:

- opportunity should be taken to engage in social interaction so that the researcher is perceived as an interested colleague;
- anonymity must be guaranteed and the subject assured that no administrative use will be made of the videotapes of the lessons or the audiotapes of the stimulated recall interviews;
- the broad objectives of the study should be made known to the subject to reduce the danger of his constructing his own theory about the researcher's intentions and so distorting data, for

  > ...if not told, [subjects] may construct their own theory about the interviewer's intentions and could respond accordingly in ways which may distort the data, and subvert, unintentionally, the investigator's purposes (Marland, 1977; p. 40).

- assure the teacher that the researcher is not being evaluative either of the lesson or of the reported thoughts.

Familiarization. The familiarization period should include the following strategies:

- the researcher should be introduced to the class and his role explained;
- the researcher should seek to gain acceptance of his presence in the classroom;
- the researcher should familiarize himself with the classroom routine, teaching styles and management techniques of the teachers to provide a context within which to identify stimulus points;

- introduce the videotaping equipment into the classroom in order that the teacher and pupils become accustomed to it. Several lessons should be videotaped and opportunities provided for the teacher and pupils to view themselves on television. In filming lessons for this purpose care should be exercised to ensure that all pupils are included. For the teacher, the significance of this step lies in the reduction of the tendency reported (Fuller and Manning, 1973) for people to concentrate initially on physical characteristics when first viewing themselves on film. This step should be incorporated to enhance the likelihood that in the stimulated recall sessions the teacher will focus on teaching behavior and not on physical cues;

- to facilitate subsequent description of stimulus points, or to permit the tracing of change in the selection of stimulus points note the VTR counter number at each stop. Explain the need for this action (in terms that do not jeopardize the study) so that the subject is reassured that no manipulation is taking place, and that what he is reporting is of paramount interest, i.e., while noting these details the researcher is still listening to what is being said. This understanding should be established in the familiarization period.

In order to maximize the accuracy and completeness with which thoughts are reported:

- establish rapport with the teacher and conduct the interviews in a non-evaluative, non-threatening environment;

- observe a comprehensive period of familiarization in order to lessen observer obtrusive effects and the tendency for subjects to focus initially on physical characteristics;

- conduct all stimulated recall interviews within 24-hours of the videotaping of the stimulus lesson.

Equipment

VTR - for stimulated recall interviews, the VTR that takes half inch reel-to-reel tape is preferable for this model permits instant stops at specific points.

TV Monitor - a small (11") monitor represents a convenient size for the monitoring of film quality during filming although it is small for class viewing during the familiarization phase. This disadvantage is offset in the stimulated recall session due to:

1) the ease and comfort of viewing,
2) ready access by both the researcher and teacher to the monitor's controls,
3) the sense of intimacy and privacy it affords. This is significant in maintaining rapport.

Microphone - a cordless or wireless microphone offers advantages over a directional microphone in that it records all teacher speech irrespective of teacher movement or the nature of the verbal interaction.

Audio Recorder - a cassette recorder offers portability and mobility during the stimulated recall interview.

Stimulated Recall Interviews

Strategies. In setting up and conducting stimulated recall interviews the following strategies are recommended:

- Before engaging in stimulated recall, study protocols generated by other researchers who employed stimulated recall methodology in order to gain greater competence with, and sensitivity to the technique.

- Conduct a pilot study, reviewing the audiotapes of the interviews to:

  1) refine questioning techniques,
  2) identify interviewer bias.

- Also have a third party review the recordings.

- Hold the stimulated recall sessions in a quiet location free from interruption. This is important if the teacher is to relax and feel free to recall and report "...the most private of his thoughts...." (Bloom, 1953; p. 162).

- Arrange the equipment as indicated in Figure 1, with the teacher located in front of the monitor for ease of viewing.

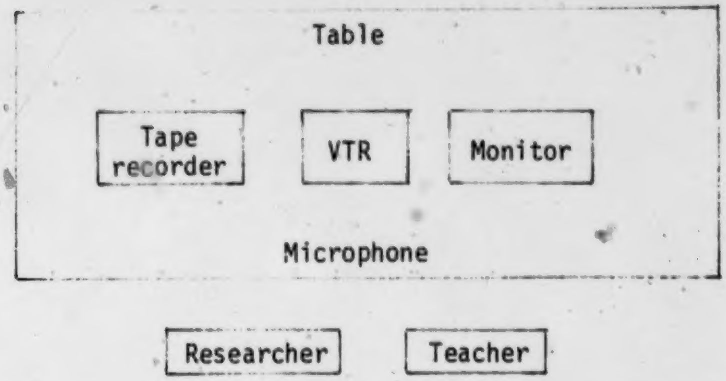


Figure 1: Arrangment of Equipment for Stimulated Recall Sessions.

With this arrangement, the controls of the videotape recorder (VTR) are convenient to both researcher and teacher so that either can stop the replay. To enable the researcher to monitor the tape recording of the interviews, place the tape recorder unobtrusively beside the VTR with the extension micorphone located in front of both the researcher and teacher. This will enable the researcher to monitor:

1) that it was operating,
2) the volume level,
3) when the end of the tape was approaching.

Data lost through a malfunctioning recorder cannot be regained.

- At the commencement of each interview:
    1) engage the teacher in general conversation in order to establish a relaxed atmosphere.
    2) reiterate the objectives of the study to reduce the danger of the teacher constructing his own theory about the researcher's intentions and so distorting data.
    3) outline the rationale for using visual and auditory stimuli to facilitate the reliving of the lesson.
    4) stress the need for complete and accurate recall and ask the teacher to:
        a. indicate when he can not recall the thoughts that occurred at a particular stimulus point,
        b. differentiate between thoughts which occurred during the lesson and those which occurred subsequently.
    5) ask the teacher to concentrate on the videotaped replay in order to "relive" the lesson, and recall thoughts, feelings and reactions that were experienced during the lesson.

6) remind the teacher that the interview will focus on the microteaching trial teaching events that occurred during the lesson. Given the objectives of the study and the decision as to how focussed the questioning is to be, encourage the subject to identify stimulus points at which to stop the replay in order to recall his interactive thoughts. Explain that the interviewer will also identify stimulus points.

   It should be noted that Kagan (Marland, 1977; p. 284) claims that:

   > ... What little is gained by having the inquirer stop the tape is lost in that the inquiree loses some sense of control in being the ultimate interpreter of his/her own experience.

7) explain that the rôle of the researcher is to assist the teacher to recall and articulate thoughts and feelings as accurately and completely as possible. Stress that the researcher is not being evaluative of either the lesson or of the reported thoughts.
8) guarantee anonymity and the confidentiality of the session.
9) build on the rapport established in the familiarization period by attending to the affective dimensions such as respect, understanding and interest. Facilitate self discovery by adopting an unobtrusive role; pose open-ended questions when teacher statements require elaboration or clarification. Leading questions or evaluative statements should be avoided.
10) in order to describe the stimulus points at which the videotape was stopped by either the teacher or the researcher, record the counter number at each stop. This will enable the researcher to review the tape and identify specific details relevant to the stimulus point.
11) when the subject is recalling his thoughts pay close attention to what is being said to:
    a. assure him of the value and importance of his statements,
    b. determine which of the many aspects of the statement require follow up questions.

APPENDIX J

EXAMPLE OF STIMULATED RECALL INTERVIEW TRANSCRIPT

Appendix J

Example of Stimulated Recall Interview Transcript

I:* Just talk into it whenever you have something to say.

T:* Yecch, is the tape running? Do you want me to leave it running all the time?

I: Yeah. Okay, you set the machine.

Presents Objectives

I: Are you going to ask me a question?

VIDEO:

Instructional Decision

I: Why didn't you ask someone what an accent was?

T: Why didn't I ask them what an accent was?

I: Instead of telling them.

T: Uhmm, I don't know. I never thought about it. I just told them. It never occurred to me.

VIDEO:

Delivery System Questioned

I: Do you think they know what you meant?

T: Beg your pardon?

I: Do you think they knew what you meant by no accents?

T: No. Well at that point I think I thought that they knew what I meant, but I discovered they didn't.

I: Oh, Okay.

Reflective Thought - Instructional Strategy

T: But if they were Grade VII's they would've known, they would've known. It's just that they were thinking of too many other things as you'll see, they get started asking all sorts of complicated questions.

I: Laugh.

T: Asking me to redefine accent, which was very difficult to do. After saying it one way.

I: What about the instruments?

T: Well, that's how things get complicated, here, you see. I wouldn't think that Grade VII's would think of things like that.

*Interviewer
*Teacher (Subject 1)

I: Laugh.

Demonstrates on trumpet.

I: Okay when that's playing back, what are you thinking of doing next? Like when you hear them.

Interactive decision difficulty.

T: I'm thinking of what I'm going to ask them, how to comment on what they're hearing.

I: So you're trying to formulate a question.

T: Yeah.

VIDEO:

I: Okay, were you never talk about bars before, why are you talking about them now?

T: Uh.

I: (Laugh) Is that part of your lesson?

Purpose of Goal Setting not secure.

T: No, No. This didn't go anywhere where I wanted it to from here on.

I: Okay, well then when you started did you give an overview. Did you sort of say, like I heard you say at the beginning, "Today we're going to talk about accents." Well having talked about accents, that was it. That was your lesson.

No overview in intro.

T: No.

I: Well, what was it?

Intro.

T: That, that was my introduction to my lesson. Saying we were going to talk about accents. Letting them know what we were going to do. The lesson I followed was the one outlined in the, in the....

Content structure secure.

I: Yeah, okay and the next part of the lesson outline there is to have them compose this piece, without accents.

I: Did you feel you had given them a lesson overview. Like, did you show them in the beginning you were going to talk about accents and then talk about how that related to whatever it does relate to. Let's assume you went into bars. Accenting the first beat of every bar.

T: I, no, I never intended to get into, into bars.

I: Okay, so it's a digression, but um, let me rephrase that. Did you give them an overview of the lesson?

Interactive decision unplanned.

T: Well, I think, I think I gave them an overview of what I intended to do. But it didn't go that way. They started asking all sorts of questions that I wouldn't expect like a Grade VII class to ask.

I: What's the difference between an overview and an introduction?

Instruction decision.

T: Well, I would think an overview would give them a general idea of everything we planned to cover.

I: Okay.

I: Was it there?

Middle of lesson activities.

T: Well I thought so. I said that we were gonna, we were gonna cover accents and how they influence a piece of music. How accents can change a piece of music.

I: Okay.

VIDEO: (Comment while video playing).

T: I was stalling for time.

Explain accents and rhythmn.

I: Laugh.

T: Laugh.

T: No, that's not true, it just happened.

I: Okay. You said "Accents give us rhythm, you see." Why did you say that? What were you thinking just saying it would be enough?

T: I, I don't know. Probably it's a verbal tick.

I: Or you didn't feel it needed explanation?

T: No, it's probably a verbal tick. It's probably something I say, like some people say, "Eeh" after everything they say?

I: Uh, hum.

T: I didn't, I never thought of saying it, I, I didn't mean anything by it. I just said it.

I: Yeah, but okay do you go on here to explain rhythm?

T: Um, I can't remember.

I: Okay, let's play (it further).

VIDEO:

Interactive decision on delivery system unplanned.

I: Now, you didn't. Okay. Were you, were you thinking when you mentioned rhythm that they knew what rhythm was?

T: Was I thinking that I mentioned rhythm? Yes, I think I would be thinking that.

I: Okay.

T: Without, without ...

I: So they would make the connection between accents and rhythm.

T: Uh, yeah. I never stopped to think if they would know what rhythm was. I guess I just assumed that they would know

VIDEO:

Goes off on tangent.

I: Oh, we've got a blank.

T: What happened to the sound? (Video sound not working).

Explaining more about accents.

I: Okay so you're giving them more information on different kinds of accents, right?

Instructional decision.

T: Uh, hum. Yeah. I was trying to get back to my original lesson.

I: Yeah, for sure.

T: Laugh.

I: Were you calling all three of those markings, accent markings?

T: Yes.

Action by demonstrating tape accents in text.

T: And I taped my horn here and I try and demonstrate if the sound is (really relative),... which wasn't a very good demonstration out of prime text... like just playing a note doesn't really....

I: With these different accents...?

T: Yeah, it doesn't really say much about it. If you don't hear it in a phrase, it means... (Video sound coming back on).

VIDEO:

I: Did you hear that klinking in the background?

T: Uhm, humm.

Interactive decision - for discipline.

I: But, why didn't you do something about it?

T: I did, I asked her a question and she stopped.

I: Okay

T: Laugh.

I: Okay.

VIDEO

I: Okay, why did you pick variance?

Content sequencing secure.

T: It was a word that popped into my head, (laugh).

I: What about breathing? Did you ever consider that?

T: Breathing.

I: Yeah, or do you consider the breath support as a function of articulation? In other words,... if you give more air, you can, you can, you can have the...

T: (Hold) without be covered under dynamics. Under Loud.

I: Okay.

T: Wouldn't it?

I: Yeah, well it depends what instrument you're on.

T: Yeah.

I: Blow harder you get...

Reflective idea on interactive decision.

T: Well this whole accent thinking get very complicated. You see it was getting very complicated here.

I: Laugh, yeah.

T: My initial concept of teaching the lesson was a very simplistic interpretation of what an accent was, but they kept asking all these... complicated questions.

I: Okay, now, when they were asking those, did you feel.. uh, threatened by having to answer them or...

T: Yes, yes because I knew it was taking me away from my first simplistic ...

I: Yeah.

T: Definition of accent.

I: Okay, is that...

T: In fact I was having to...

I: Yeah.

T: Almost contradict myself...

I: Is that because you're own definition of accent is not that secure?

Content structure questioned as far as delivery system.

T: Uh, that. No. Well perhaps, perhaps in part, because I would find accent a hard thing to package into a definition.

I: Yeah.

T: Uhm, I could talk around accent for a long time, at a level with these people, that were almost talking up here.

I: Uhm, humm.

T: Uh, like to package it for a Grade VII class in a lesson like this, I, I'd have a hard time doing it if they start asking me questions and didn't just accept what I said is, this is what an accent is.

I: Okay, how is, how does acceptance lead to understanding?

T: How does acceptance lead to understanding on their part?

I: Yeah.

T: About accents?

I: Think of Grade VII's.

T: Uh, well the acceptance of what, what they're accepting is true about an accent. It might be simplistic and it might only be one part.

I: Whole certain facts and obeyance until it gets into larger...

T: Yeah, yeah sort of like the way you teach lots of things, you know little increments at a time.

I: Yeah.

Reflection on instructional delivery.

T: And as they learn more of the music, because, personally, I feel the way to teach accents isn't in a class like this. It's in a piece of music when they happen. Like, imitation. Listen to someone who does it correctly.

I: Okay.

T: Am I

I: Yeah, okay, that's all. Let's get on with this.

VIDEO:

No self-evaluation at end except

I & T: Laugh.

T: What a way to come back from reading week.

I: Oh, that was it.

T: Yeah, thank goodness.

I: Laugh. Oh that was terrific

T: Laugh. Pretty good entertainment, eh?

I: Yeah

END

APPENDIX K

(QUESTION 1) BEHAVIOR AFFECTS OF MODELLING

Appendix K

(Question 1) Behavior Affects of Modelling

Group A

As indicated in Table 3 significant differences were noted only in eleven separate behaviors. Both the pre- and post-test scores have been indicated. However, since the frequencies are low the discussion of the differences in statistical terms is followed by a general discussion which focusses on the results and their effects.

Twenty-four of the teaching behaviors showed mean increases for Group A. Although there were significant differences in eleven behaviors: #1 (teacher begins speaking when all pupils are paying attention), #3 (teacher introduces the lesson with brief overview), #4 (emphasizes objective), #5 (teacher has students note objectives after presenting them), #7 (presents information clearly), #8 (communicates at the pupils' level of comprehension), #15 (displays students' work and accomplishments), #18 (teacher prevents misbehaviors from continuing), #21 (smoothness), #22 (momentum), and #26 (empathy), no conceptual pattern emerged.

However, looking at general scores, the Group A subjects began the lesson and introduced the lesson objective much more effectively after the treatment than before. Likewise, the behaviors centering around the use of activities, optimizing academic learning time, and selecting suitable repertoire were more effectively implemented, as were the end-of-the-lesson behaviors which deal with a review being presented and the pre-service teacher leaving the pupil with the feeling of accomplishment. Scores also improved on behaviors based on praise and criticism, i.e., criticism used with discretion, discipline directed accurately, misbehaviors prevented from continuing and praise used as specifically as possible.

The next cluster of behaviors is composed of generic teaching principles (#19 - 26) which are referred to across grade level and subject matter. The pre-service teacher scores all showed increases which imply that if a lesson is organized, the overall teaching style improves. The style elements include pacing the lesson, a smooth flow of events, a clear presentation, ability to motivate children, attending to more than one issue at a time, offering a warm accepting atmosphere for children, and responding to feelings of children.

Finally, the last five behaviors deal with interaction (only coded in the post-teatment) and were effectively implemented as evidenced by all scores being above 3.5 except for one score (behavior #27) which was below 3.5. This result indicates that the teacher: rephrased and gave clues to elicit improved responses, used praise appropriately, gave mild criticism to more able pupils, and responded accurately to pupils' responses. Although no scores were available for the pre-test, information on pre-test interaction can be obtained from Table 3 and the following discussion.

The types of questions asked during the lesson for both the pre- and post-test were mostly product questions. This is in agreement with Stalling and Hentzell's (1978) study which cites evidence for the frequency of factual single-answer questions which are positively related to achievement in direct teaching for skill subjects (i.e., music, math and reading). Group A tended to ask more product questions in the post test (35 compared to 21 questions) and fewer process questions (23 compared to 9 questions). The next sections will discuss classroom events and class interactions.

Classroom events are categorized into drill, activities and classroom management. Instructional activities are the basic structural units for classroom action and are teacher directed. They have an important function in the teacher's planning decisions (Doyle, 1977). Drill is that element in the lesson that is consistently repeated. Classroom management is the form of activity used to secure attention and to maintain order (Gage, 1963; p. 3).

The time spent for teaching the lessons was approximately forty minutes for the sectionals and full rehearsals and fifty minutes for the general music classes. Rosenshine (1979) cites evidence for the number of academically engaged minutes and the amount of content covered as being important for gains in pupil achievement, a point of view supported by this study.

The amount of time spent on drill in Group A lessons increased from 19.11 minutes to 24.08 minutes. Since a concert date had been previously set for the week following the observations, there is a natural tendency to increase the time spent on drill. In addition, however, the subjects also increased the amount of time spent on instructional activities for the pupils, an increase from nine minutes to fifteen minutes. Due to the increased time spent on drill and instructional activities, the time spent on classroom management decreased from 6.88 minutes to 3.58 minutes. Therefore it can be concluded that the pupils spent more academically engaged minutes in the post-treatment lessons.

Difference of Means

Group B

This discussion will center around the changes found in teaching behaviors, classroom events and interactions. Only one significant difference was noted and since the sample number was low, it is appropriate to limit the discussion to general differences in the means. Conclusions will be drawn from the results of the teaching behaviors and the effects on the classroom events and class interactions.

Of the thirty-one behaviors noted, only fourteen behaviors improved while one remained constant. Contrasted with Group A who improved on twenty-four behaviors, it is important to note that this group was not as effective in changing their teaching patterns.

The behaviors centering around the presentation of lessons (i.e. behaviors #1 - 18) showed marked variation between pre- and post-tests. In the beginning-of-the-lesson, only two behaviors improved: introducing the lesson with a brief overview and presenting the lesson objective. The behaviors associated with calling the class to attention and the students' noting the lesson objective were less effective in the post-test than in the pre-test. The middle-of-the-lesson behaviors all improved as the subjects presented the information to the pupils in a clear, orderly manner, communicated at the pupils' level of comprehension, used a variety of instructional techniques, and selected repertoire material which was suitable to the pupils' level of performance and understanding. The end-of-the-lesson behaviors also showed improvements as the subjects, after study of remedial materials, returned to the original repertoire with increased understanding, reviewed the main ideas of the lesson, developed an appropriate evaluation system for use at the end of the lesson, and left the pupils with a feeling of accomplishment. However, the praise and criticism behaviors did not show improvement. Criticism was used with discretion and included some correct alternatives.

Ultimately, since some discretion was permitted in the presentation of the lesson, the net result on the general teaching style was one of regression. The behaviors having to do with withitness, smoothness, overlappingness, momentum, and persuasiveness were all behaviors which showed a decrease in their effectiveness of implementation. Only the behavior of warmth showed improvement and the behavior of empathy stayed about the same.

The teaching periods of the music lessons were forty minutes for the sectionals and full rehearsals and fifty minutes for the general music classes. Colbert (1979) cited evidence that a teacher is better able to create and control the behavior setting of her classroom if she considers both the instructional activities, and teaching routines, which include both teaching procedures and general classroom management strategies. The present study investigates considerations involving classroom management, drill and instructional activities.

The amount of time spent on drill for Group B increased from 17.22 minutes to 21.70 minutes. The time spent on instructional activities decreased, however, perhaps due to the pressure of the approaching concert. The most important finding was that the time spent on classroom management decreased from 9.00 minutes to 5.10. Apparently, less time was spent on classroom management events with the subjects in Group B, when more time was spent on drill. However, the decreased time spent on instructional activities needs further explanation since research indicates directed instructional activities contribute greatly to pupil achievement gains (Chapter V).

The teacher-student interaction is displayed in both the last five behaviors, and the relative frequency percentages of the product and process questions asked by the subject during the teaching of the lesson. Although no pre-scores are available, Group B subjects tended to use praise and criticism appropriately in their interactions and also accepted pupils' questions and comments as evidenced by the mean scores of 3.00 or above for the last three behaviors. Like Group A, most of Group B's questions were product orientated in that they were direct, single-answer, and factual. This was true during both the pre- and post-test observation periods. There was a notable increase in the percentage of product questions asked, from 47% to 60%. The number of process questions decreased from 21% to 13.8%. It can be concluded that the treatment was effective in helping Group B interact with more product questions.

Difference of Means

Group C

This discussion will center around the teacher behavior changes, the changes in the classroom events (drill, activities, and classroom management) and the changes in the class interactions resulting from the teacher's use of behaviors. Since the number of observations was small, and only two significant correlations exist (#1 and #8) the general differences of the means will be discussed rather than only the significant differences. From this discussion, conclusions are drawn regarding the teaching behaviors and the subsequent effects on the classroom events and interactions.

Of the thirty-one noted behaviors, only seventeen improved in Group C. By comparison, Group A increased in twenty-four behaviors and Group B in fourteen behaviors. Of the three, therefore, Group A was the most effective in changing their teaching patterns.

The behaviors fall into two categories: behaviors involved in presenting a lesson and generic teaching behaviors. In presenting the lesson, Group C subjects were not effective at calling the pupils to attention, but they did effectively introduce the lesson with a brief overview, presented an objective, and had the pupils note that objective. On these three behaviors, there were increases in the mean scores for the subjects. The middle-of-the-lesson behaviors all showed an increase. The subjects were effective at demonstrating the objective to be learned, presenting the information in a clear orderly manner, communicating at the pupils' level of comprehension and using a variety of instructional techniques, thus making better use of academic learning time and the carefully selected repertoire material. The end-of-the-lesson behaviors all decreased in effectiveness of implementation i.e., the objective was not put back in the repertoire with increased understanding, no evaluation system was developed and the work of the pupils was not displayed. However, Group C subjects were effective in their use of criticism and praise, but they were not as effective in directing disciplinary action or preventing misbehaviors from continuing.

With the exception of numbers 23 and 26, the generic teaching behaviors all were implemented with increased effectiveness. The subjects showed increases in withitness, smoothness, momentum, persuasiveness and warmth. However, the behaviors of clarity and empathy remained unchanged in their effectiveness of implementation, possibly due to existing disciplinary problems.

The behaviors dealing with interaction all showed high means ranging from 3.20 to 5.00. Even though no comparison is available directly with the pre-test scores, the subjects were effective 75% of the time in selecting many different pupils to respond to questions, in staying with a pupil longer to obtain a correct response, in appropriate praise and criticism and in acceptance and integration of pupils' questions or comments.

The time spent in teaching the music classes was forty minutes for each of the sectionals and full-rehearsals and fifty minutes for each of the general music classes. The amount of time spent on drill for Group C increased from 20.9 minutes to 22.0 minutes. The time spent on instructional activities decreased, however, from 14.35 to 9.17, probably due to the pressure of the concert. As in Group B, the most pertinent finding was the time spent on classroom management which decreased from 9.00 minutes to 5.23 minutes. While less time was spent on classroom management, more was spent on drill which caused discipline problems during the administration of the post-tests. The causes of the discipline problems and their influence on correlations which exist between the behaviors and the events of the classroom were discussed in Chapter VI.

The last five behaviors and the total number (i.e., frequency percentages) of the product and process questions describe the interactions in the classrooms observed. Although no pre-scores were coded, Group C (control which had all scores of 3.20 or above in the post-test) implemented all the interaction behaviors (i.e., behaviors #27 - 31) effectively. These behaviors include the selection of many pupils to respond, the instigation of a sustaining effect with pupils, the use of appropriate praise and criticism and the acceptance of pupils' answers and responses. It is of interest to note that in Group C, the number of product questions dropped from 135 questions to 42 questions and the number of process questions dropped from 29 to 4 questions. The relative frequency was not noticeably changed, however. Perhaps the presence of discipline problems associated with the post-test scores could account for the subjects asking fewer questions.

Summary of Results

The significant differences noted in the groups were as follows: Group A obtained eleven significant differences when the pre- and post-test scores were compared. Group B obtained one significant difference, and Group C obtained two.

Generally speaking, however, Group A improved their performance on twenty-four behaviors, while Groups B and C improved on fourteen and seventeen behaviors, respectively.

The most noteworthy improvement in classroom events occurred in classroom management at which all groups spent less time. Group A increased the time spent on drill and activities. Groups B and C spent less time on activities and more time on drill.

The classroom interactions included the following results. All groups decreased their use of process questions. Groups A and B increased the frequency percentage of product questions, while Group C stayed approximately the same. Both Groups A and B asked approximately the same number of questions in total, while Group C asked substantially fewer.

APPENDIX L

(QUESTION 2) CORRELATED BEHAVIORS FOR GROUPS

Appendix L

(Question 2) Correlated Behaviors for Groups

In the following section, the correlations of the behaviors to the classroom events and interactions for all groups will be discussed. The results of the correlations are found in six pre- and post-test tables for each group. Three sub-sections will discuss the results for each group.

Group A

This sub-section includes a discussion of the pre- and post-correlations for Group A (Tables 8 and 9).

Pre-Test: Three behaviors correlate with drill in the pre-test for Group A. These are numbers 3, 6, and 17 which state respectively: the teacher begins the lesson with a brief overview, the teacher gives a demonstration of explanation, and the teacher directs disciplinary action accurately.

A behavior which correlates with activities in the pre-test is number 9 which states that the teacher use a variety of instructional techniques to meet the learning needs of the pupils.

Three behaviors which correlate with classroom management in the pre-test are numbers 7, 9, and 23 which state respectively that: the teacher presents the information in a clear and organized manner, the teacher uses a variety of instructional techniques, and the teacher is clear in presentations to class.

Four behaviors which correlate with product questioning in the pre-test are numbers 2, 10, 20, and 22 which state respectively: the teacher stops speaking until all pupils are paying attention, the teacher optimizes academic learning time, the teacher attends to more than one issue at a time and (momentum) the teacher's behavior maintains the pace of the lesson.

Eleven behaviors which correlate with process questioning in the pretest are numbers 3, 5, 12, 13, 15, 18, 19, 20, 21, 24 and 25 which state respectively: the teacher begins the lesson with a brief overview, the teacher has the students notate the objective, the teacher puts the highlight or the objective back in the repertoire with increased understanding at the end of the lesson, the teacher reviews the essential content of the lesson, the teacher displays the work of students and leaves them with a feeling of accomplishment, the teacher prevents misbehaviors from continuing, withitness, overlappingness, smoothness, persuasiveness, and warmth.

Post-Test: Behavior number one correlates with drill in the posttest in Group A. This behavior states that the teacher begins speaking to the group when all students are paying attention.

Four behaviors correlate with instructional activities in the posttest for Group A, numbers 18, 19, 24 and 27 which state respectively: the teacher prevents misbehaviors from continuing, (withitness) the teacher is aware of what was going on in the classroom, persuasiveness, and many different pupils are selected by the teacher to respond to questions.

Two behaviors correlate with classroom management in Group A in the post-test, numbers 12 and 27 which state respectively: the teacher puts the highlight or objective back in the repertoire with increased understanding at the end of the lesson, and many different pupils are selected by the teacher to respond to questions.

Seven behaviors correlate with product questions for Group A in the post-test, numbers 4, 5, 6, 8, 10, 22 and 31 which state respectively:

the teacher presents the objective to be emphasized, has the pupils notate that objective, proceeds by a demonstration or explanation of that objective, communicates at the pupils' level of comprehension, optimizes academic learning time, momentum, and teacher integrates pupil initiated interaction.

Five behaviors correlate with process questions in the post-test for Group A, numbers 1, 19, 24, 25 and 29 which state respectively: the teacher introduces the lesson with a brief overview, withitness, (persuasiveness) the teacher is able to motivate the children, warmth, and the teacher uses praise to reward outstanding work or to encourage other pupils.

Group B

This sub-section includes a discussion of the pre-and post-test correlations for Group B (see Tables 10 and 11).

Pre-Test: Four behaviors correlate with drill events in the pre-test for Group B. These behaviors, numbers 9, 15, 20 and 25 state respectively: the teacher uses a variety of instructional techniques, the teacher displays the work of the students and leaves them with a feeling of accomplishment, overlappingness, and warmth.

There are no behaviors which correlate with instructional activities in the pre-test for Group B.

Eleven behaviors which correlate with classroom management in the pre-test are numbers 3, 6, 7, 10, 12, 13, 21, 22, 23, 24 and 29 which state respectively: teacher introduces the lesson with a brief overview, a demonstration precedes the children's attempt to work at the objective, the teacher presents information to pupils in a clear and organized manner, the teacher ensures that pupils are actively involved in learning tasks, the teacher puts the objective back in the repertoire with increased understanding, the teacher reviews the main ideas at the end of the lesson, smoothness, momentum, clarity, persuasiveness and teacher uses praise to reward as well as to encourage pupils.

Twelve behaviors which correlate with product questions in the pre-test for Group B are numbers 2, 3, 5, 6, 13, 15, 17, 19, 20, 22, 24 and 26, which state respectively: the teacher stops speaking until all students are paying attention, the teacher introduces lesson with a brief overview, the teacher has students notate the objective, the demonstration precedes the pupils' attempt at the objective, the teacher reviewsthe main ideas near the end of the lesson, the teacher displays the work of the students and leaves them with a feeling of accomplishment, the teacher directs disciplinary action accurately, withitness, overlappingness, (momentum), the teacher's behavior maintained the pace of the lesson, persuasiveness and empathy.

There are no behaviors which correlate with process questions in the pre-test for Group B.

Post-Test: Following is a description of the post-test scores for Group B.

Two behaviors correlate with the drill post-test for Group B. These are behaviors number 9 and 26 which state respectively: the teacher uses a variety of instructional techniques adapting instruction to meet learning need, and (empathy), the teacher responds to the experiences of children.

A behavior which correlates with activities in the post-test is number 9 which states that the teacher uses a variety of instructional techniques adapting instruction to meet learning need.

A behavior which correlates with classroom management in the post-test is number 16 which states that the teacher uses criticism with discretion and should include some specification or desirable alternatives.

Four behaviors which correlate with product questions in the post-test are numbers 4, 6, 9 and 29 which state respectively: the teacher presents the objective that is to be emphasized at the beginning of the lesson, teacher presents a demonstration which precedes pupils' attempt to do the work, teacher should use a variety of instructional techniques, and the teacher uses praise to reward outstanding work or encourage other pupils.

Ten behaviors which correlate with process questions in the post-test are numbers 1, 3, 4, 6, 7, 12, 17, 19, 24, and 26 which state respectively: the teacher begins speaking when all students are paying attention, the teacher introduces the lesson with a brief overview, the teacher presents the objective that is to be emphasized at the beginning of the lesson, a demonstration precedes the children's attempt to work at the objective, the teacher presents information in a clear and organized manner, the teacher puts the objective back in the repertoire with increased understanding at the end of the lesson, the teacher directs disciplinary action correctly, (withitness) the teacher is aware of what is happening in the classroom, (persuasiveness) the teacher is able to motivate children, and (empathy) the teacher responds to meanings, feelings, and experiences of children.

Group C

In the following sub-section, a discussion of the pre- and post-test correlations for Group C will be given (see Tables 12 and 13).

Pre-Test: There are no behaviors which correlate to drill in the pre-test for Group C.

A behavior which correlates with instructional activities for Group C is number 26 which states that the teacher respond to feelings, meanings, and experiences of the pupils.

Three behaviors which correlate with classroom management in the pre-test for Group C are behavior numbers 2, 17 and 26 which state respectively: the teacher stops speaking until all students are paying attention, the teacher directs disciplinary action accurately and (empathy) the teacher responds accurately to meanings, feelings, and experiences of the children.

Five behaviors which correlate with product questions in the pre-test for Group C are numbers 6, 12, 18, 23 and 26 which state respectively: a demonstration precedes the children's attempt to work at the objective, the teacher puts the objective back in the repertoire with increased understanding at the end of the lesson, the teacher prevents misbehaviors from continuing, clarity, and the teacher responds accurately to meanings, feelings and experiences of children.

Three behaviors which correlate with process questions in the pre-test are numbers 5, 16 and 26 which state respectively: after presenting the objective, the teacher has the students note it, criticism is used with discretion and should include desirable or correct alternatives, and the teacher responds accurately to meanings, feelings, and experiences of children.

Post-Test: Following is a description of the post-test results for Group C.

Eight behaviors which correlate with drill in the post-test are numbers 1, 2, 8, 10, 11, 15, 19 and 24 which state respectively: the teacher begins speaking to group when all students are paying attention, the teacher stops speaking until all students are paying attention, the teacher communicates at the pupils' level of comprehension, the teacher ensures that pupils are actively engaged in learning tasks, the teacher selects repertoire material which is suitable for the students' level of comprehension, the teacher displays the work of the students and leaves them with a feeling of accomplishment, (withitness), the teacher is aware of what is happening in the classroom and (persuasiveness), the teacher is able to motivate children.

Nine behaviors which correlate with activities in the post-test are numbers 3, 4, 5, 6, 9, 11, 16, 20 and 27 which state respectively: the teacher introduces the lesson with a brief overview, the teacher presents the objective that is to be emphasized at the beginning of the lesson, after presenting the objective, the teacher has the pupils note it, a demonstration precedes the pupils' attempt to perform the objective, the teacher uses a variety of instructional techniques, the teacher selects repertoire material which is suitable to the pupils' level of performance and understanding, criticism is used with discretion and should include alternatives, (overlappingness), the teacher is able to attend to more than one issue at a time, and many different pupils are selected by the teacher to respond to questions.

Six behaviors which correlate with classroom management in the post-test are numbers 9, 10, 22, 24, 25, and 27 which state respectively: the teacher uses a variety of instructional techniques, the teacher ensures pupils are actively involved in learning tasks, (momentum), the teacher behavior maintains the pace of the lesson, (persuasiveness), the teacher is able to motivate the pupils, (warmth), the teacher provides evidence of caring and accepting the pupils, and many different pupils are selected by the teacher to respond to questions.

Seven behaviors which correlate with product questions in the post-test are numbers 1, 2, 10, 16, 17, 19 and 20 which state respectively: the teacher begins speaking to the group when all students are paying attention, teacher stops speaking until all students are paying attention, the teacher ensures pupils are actively engaged in learning tasks, criticism is used with discretion and includes some desirable alternatives, the teacher directs disciplinary action accurately, the teacher is aware of what is happening in the classroom, and (overlappingness), the teacher is able to attend to more than one issue at a time.

Fifteen behaviors which correlate with process questions in the post-test are numbers 1, 2, 3, 4, 6, 7, 9, 10, 12, 17, 18, 19, 20, 25 and 28 which state respectively: the teacher begins speaking when all students are paying attention, the teacher stops speaking until all students are paying attention, the teacher introduces the lesson with a brief overview, the teacher presents the objective that is to be emphasized at the beginning of the lesson, a demonstration precedes the children's attempt to work at the objective, the teacher presents information to pupils in a clear and organized manner, the teacher uses a variety of instructional techniques adapting instruction to meet learning needs, the teacher ensures pupils are actively engaged in learning tasks, the teacher puts the objective back in the repertoire with increased understanding at the end of the lesson, the teacher directs disciplinary action accurately, the teacher prevents misbehaviors from continuing, (withitness), the teacher is aware of what is happening in the classroom, (overlappingness), the teacher is able to attend to more than one issue at a time, (warmth), the teacher provides evidence of caring and accepting the pupils, and when pupils' answers were incorrect, the teacher uses techniques to help pupils give improved responses.

Summary Table of Significant Group Differences
Between Pre- and Post-Tests

Groups	Significant Behaviors		
	Pre-Test	Post-Test	Differences
Group A			
Drill	3	1	2
Activities	1	2	1
Classroom Management	3	2	1
Product	4	7	3
Process	11	5	6
Group B			
Drill	4	2	2
Activities	0	1	1
Classroom Management	11	1	10
Product	12	4	8
Process	0	10	10
Group C			
Drill	0	8	8
Activities	1	9	8
Classroom Management	3	6	3
Product	5	7	2
Process	3	15	12
			$\overline{X} = 5.06$

APPENDIX M

(QUESTION 2) CORRELATED BEHAVIORS AND CONTEXTS

Appendix M

(Question 2) Correlated Behaviors and Contexts

Conners (1978) cites evidence that contextual variables within subject areas or lesson modes do not have any pervasive influence upon teachers' behaviors. However, Conners did mention the need for further investigation in this area. The present study will investigate the validity of his theory by comparing the mean scores of the teaching behaviors in different music contexts.

The pre-test scores show variations in their means. Low scores are those under 2.5 and high scores are 3.5 or above. The lowest scores found in the pre-test results are found in the full-rehearsal and general music where a total of three scores for each are below 2.5 (see Table 19 for behavior numbers). These behaviors center around the middle of the lesson. The highest group of scores is found in sectionals where a total of 18 scores are 3.5 or above (see Table 19 for behavior numbers). These behaviors cluster around the three facets of presenting a lesson and include the teaching style behaviors as well. Twenty-one high scores were also found in general music (see Table 19 for behavior numbers).

Post-treatment scores showed substantial increases in all music contexts. Significant improvement was especially noted in full-rehearsal and general music classes. In the full rehearsal, the number of low scores decreased from three to zero, while the number of high scores increased from three to nineteen. In sectionals, high score behaviors increased from eighteen to twenty-two. In general music, low score behaviors decreased from three to zero and high scores increased from six to twenty-one. In summary, general music and full-rehearsal displayed the greatest number of significant differences, and all of these were positive.

In comparing the means of the behaviors in the various music contexts notable pre- and post-test score increase or decrease is defined as a variation of .5 or more in the mean. In sectionals (Table 17) mean scores on eighteen behaviors increased seven notably, and nine decreased. Only behavior number 8 (i.e., should communicate at pupils' level) showed a significant increase. In the full-rehearsal (Table 15), of the twenty-seven scores in which increases were noted, seventeen were notable (i.e., behavior numbers 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 21, 25 and 29. In general music (Table 16) of the twenty scores in which increases were noted, fifteen were notable (i.e., behavior numbers 1, 3, 5, 6, 7, 8, 9, 12, 13, 14, 15, 22, 23, 26 and 29). Only six means in general music displayed a decrease. In summary, post-test scores indicated improvement in all classes. However, decreases were also noted in sectionals (i.e., 12 behaviors in total). Perhaps these behaviors for sectionals which involve only a small group of pupils, are not as effective as teaching behaviors for larger groups. The effect of the above behaviors on the events of the classroom (drill, activities, classroom management) and class interactions will be discussed in Chapter VI.

Summary of Results

This section discusses the results of the classroom events in each music context.

Rosenshine (1979) found in effective teaching half the available time should be devoted to drill. The findings of the present study confirm Rosenshine's view that at least half of the available teaching time was spent on drill in each music context. Additional findings indicate that in sectionals and general music, a quarter of the time is spent on instructional activities.

A difference between the pre- and post-test scores which is consistent for each music context was the expenditure of less time in classroom management. This agrees with Rosenshine (1979), who found favorable evidence for the use of direct teaching behaviors.

The time spent on instructional activities in the post-test in sectionals and general music increased, while full-rehearsals decreased. This decrease was probably due to the pressures of the advancing concert which was scheduled for the next week. However, Group A, in spite of the imminent concert, increased the amount of time in instructional activities.

An important finding is that since the time spent on drill in general music increased (by approximately 1/3) there was a decrease in the amount of time spent on classroom management. These findings agree with Gagne and Briggs (1974) who cite evidence that an increase in the use of drill will produce a decrease in the amount of time spent on discipline in the classroom.

APPENDIX N

(QUESTION 3) CORRELATED BEHAVIORS AND FEEDBACK EFFECTS

Appendix N

(Question 3) Correlated Behaviors and Feedback Effects

Group Comparisons

Comparisons of the means for Groups A, B and C are found in Tables 20 21 and 22. A summary of the results for the Groups is found in Table 23

Context Comparisons

Differences of the means for the music contexts (Sectionals, Full Rehearsals, and general music classes) are found in Tables 14, 15 and 16 A summary of these results is found in Table 19.

Summary of Group Results

This summary of the preceding section is in two parts: the analysis of the group scores (Table 23) and of the context scores (Table 19).

The Group A scores for subjects in the pre- and post-tests include both significant and general differences. In the scores for this experimental group, there are eleven significant differences for behavior numbers 1, 3, 4, 5, 7, 8, 15, 18, 21, 22 and 26 respectively. These behaviors include, calling the class to attention, introducing lesson with a brief overview, emphasizing the objective, students noting the objective, presenting information clearly, communicating at pupils' level of comprehension, displaying pupils' work and accomplishment, preventing misbehaviors from continuing, smoothness, momentum, and empathy. Since the entries for each group are relatively small (eight or less), a comparison of high scores and low scores was performed. High scores for the behaviors are means of 3.5 or above, for the classroom events and interactions are scores above the total sample means. Low scores for the behaviors are 2.5 or below, and for the classroom events and interactions are below the total sample mean.

In the pre-test, Group A obtained low score ratings on three behaviors and none on the post-test. They also obtained low scores (below total sample mean) in the frequency of pre-test process questions which became high (above total sample means) in the post-test. High ratings (3.5 or above) were attained in six behaviors in the pre-test and twenty-eight in the post test. Not only was the amount of time spent on drill and activities above the total sample means for the pre-test, so was the amount of time spent on classroom management for Group A, demonstrating the need for higher behavior ratings in discipline. In the post-test, the amount of time spent on classroom management fell below the mean, while that spent on drill and activities rose. For the pre-test, the frequency of product questions was above the total sample mean and in the post-test, below.

The Group B scores for subjects in both the pre- and post-tests revealed both significant and general differences. A significant difference was found in behavior number 21 - smoothness. General differences were found in the high and low scores of the behaviors, the classroom events, and the interactions. In the pre-test, two behaviors were low (2.5 or below) and in the post-test, five. The amount of time spent on drill was low in both the pre- and post-tests as was the frequency of the pre-test product questions. In the post-test however, these product questions were above the total sample mean. In the pre-test, seven behaviors were high (3.5 or above) as were thirteen in the post-test. The amount of time spent on activities and classroom management continued above the total sample mean in both the pre- and post-tests. Process question frequencies were above the total mean for both the pre- and post-tests.

Group C scores for the subjects in the pre- and post-tests revealed both significant and general differences. Significant differences were found in two behaviors: number 1 - the teacher begins speaking when pupils are all paying attention and number 8 - the teacher communicates at pupils' level of comprehension. General differences were found in high or low scores in the behaviors, the classroom events, and the interactions. In the pre-test, low scores (2.5 or below) were found in three behaviors, in the post-test, in one. A low score on process questions (below the total sample mean) was noted in both the pre- and post-tests. High ratings were found in eleven behaviors in the pre-test and in fourteen in the post-test. The amount of time spent on drill, activities and classroom management was notably high (above the total sample mean) for the pre-test especially in light of the low scores for drill and activities and high scores for classroom management in the post-test. The percentage frequency or product questions for both the pre- and post-test was high.

Summary of Results

A summary of the differences of mean scores for the music contexts is found in Table 19. Since pre- and post-test correlations were not analyzed in the different contexts, only general pre- and post-test differences for the total sample will be discussed in the following section.

The scores obtained in sectionals for the total sample in both the pre- and post-test include differences in the behaviors, the classroom events, and the interactions. Two behaviors received a low score in the pre-test and two low ratings were given in the post-test. The time spent on classroom management and activities was rated as low on the pre-test while classroom management and drill were rated as low in the post-test. The amount of time spent on drill was high in the pre-test while the time spent on activities was high in the post-test for sectionals. Product questions were rated as low in both the pre- and post-test while process questions were rated as high in the pre-test, but were low in the post-test.

The scores obtained in the full-rehearsal in both the pre- and post-test include differences in the behaviors used, the time spent on classroom events, and the frequency of interactions. In the full-rehearsal, three behaviors were low in the pre-test while no low ratings were given in the post-test. Only three behaviors in the pre-test compared to nineteen in the post-test were high. In both the pre- and post-test, the full-rehearsal time spent on activities was low, while drill was high. In classroom management, a low rating was given in the pre-test as compared to a high in the post-test. Process questions were low in both pre- and post-tests, while product questions were high.

The scores obtained in general music in both the pre- and post-tests reveal differences in the behaviors used, the time spent on classroom events, and the frequency of interactions. Only a few subjects obtained ratings for general music whereas all subjects obtained ratings in sectionals and full-rehearsals. Of the scores obtained, three behaviors were low in the pre-test and none were low in the post-test. Only six behaviors were high in the pre-test compared to twenty-one in the post-test. In both the pre- and post-tests, the time spent on drill was rated as low in general music and high in classroom management. A notable difference existed in activities however, since a high score was obtained in the pre-test and a low score was obtained in the post-test. The frequency of process and product questions was high in both the pre- and post-tests.

APPENDIX O

(QUESTION 4) DIFFERENT SAMPLE COMPARISONS

Appendix O

(Question 4) Different Sample Comparisons

A comparison of the CRT total sample pre-test scores and the researcher's experimental groups (Groups A, B and C) pre- and post-test scores are found in Tables 24 and 29. Since the thirteen teaching behaviors (#19 - 31) are believed to be generic in that they apply to teaching across subject matter and grade level lines, a comparison is calculated first to ascertain if the groups were essentially the same, and second if indeed any differences did exist.

Pre Comparison

A discussion of the results of both groups pre-test scores follows. The results of the pre-test scores indicate only five significant differences for all groups. In Group A, behavior number 24 - persuasiveness, and behavior number 26 - empathy were significantly low as was behavior number 29 - teacher uses praise to reward and encourage students in Group B (Table 31). In Group C, behavior number 19 (withitness) - teacher is aware of what is happening in the classroom, and behavior number 22 (momentum) - teacher's behavior maintains the pace of the lesson, were significantly low. In summary, all groups were essentially the same on the pre-test.

Post Comparison

A discussion of the results of the pre-test scores for the total CRT sample and the post-test for the researcher's experimental sample follows.

The CRT sample pre-test and the experimental post-test contain a number of significant differences. It is important, at this time, to notice the differences in which the experimental groups were affected by the treatment. In the comparison of pre- and post-scores on the 13 behaviors, Group A improved substantially on nearly every item. In comparing pre-test and post-test scores, Group B behaviors rated lower on every item except behavior number 25 - warmth, and behavior number 29 - teacher uses praise to reward pupils' work, while Group C's behavior essentially did not change except for behavior number 22 - momentum.

In comparing the total CRT sample pre-test with the Group A post-test scores, all behaviors improved except behavior number 28 - teacher's use of sustaining questions, which was rated lower. In the twelve behaviors that improved, there were four significant differences. In Group B, all the behaviors except one score were rated lower than the CRT total sample pre-test. Six significant differences in the comparison were lower. In Group C, all the behaviors were rated below the CRT total sample mean except behavior number 30, teacher's use of mild criticism on occasion to communicate expectations to pupils, which was significantly higher. There was one significant difference which was lower in behavior number 20 (overlappingness), the teacher was able to attend to more than one issue at a time.

Summary of Results

In summary, although Group A improved substantially on nearly all behaviors because of the smallness of the sample, only five of these behaviors were significant. Group B's performance declined on most behaviors and six of these significant differences were notably lower. Group C remained essentially unchanged. However, when compared to the CRT total sample pre-test, nearly all Group C scores were below the CRT mean except for one behavior which was significantly higher and one that was significantly lower.

APPENDIX P

INSTRUCTIONAL BEHAVIOR EVALUATION

Appendix P

Instructional Behavior Evaluation

Directions: In questions one (1) through four (4), please circle an appropriate response for each item.

1. To what extent did the lecture lessons embody or reflect music instruction characteristics:

	High				Low
1.1 Principles	1	2	3	4	5
1.2 Clarity	1	2	3	4	5
1.3 Usefulness	1	2	3	4	5
1.4 Interest Level	1	2	3	4	5
1.5 Work Load	1	2	3	4	5
1.6 Effectiveness of music instruction structure	1	2	3	4	5
1.7 Fairness of Grading	1	2	3	4	5

2.0 On the whole, how much do you think you learned in the lectures?

a. A great deal
b. A moderate amount
c. Not very much
d. Generally, a waste of time

2.1 On the whole, how much do you think you learned in the practise sessions? (If applicable).

a. A great deal
b. A moderate amount
c. Not very much
d. Generally, a waste of time

2.2 On the whole, how much do you think you learned in the actual teaching of a music lesson?

a. A great deal
b. A moderate amount
c. Not very much
d. Generally, a waste of time

3. Planning Instruction: Rate the effectiveness of the instructional behaviors in assisting you in the following areas:

	High				Low
3.1 Selecting and specifying goals, aims and objectives	1	2	3	4	5
3.2 Selecting instructional strategies	1	2	3	4	5
3.3 Organization of classroom discipline	1	2	3	4	5
3.4 Selecting and developing materials and activities	1	2	3	4	5

3. Continued:

	High				Low
3.5 Collaborating with others in planning	1	2	3	4	5
3.6 Developing procedures and routines	1	2	3	4	5
3.7 Evaluating instruction or instructional design	1	2	3	4	5

4. Conducting and Implementing Instruction: Rate the effectiveness of the instructional behaviors in assisting you with the following areas:

4.1 Structuring/establishing rapport/ providing atmosphere	1	2	3	4	5
4.2 Motivating/reinforcing students: providing feedback	1	2	3	4	5
4.3 Conducting discussion/small group activities	1	2	3	4	5
4.4 Individualizing instruction/conducting individual activities	1	2	3	4	5
4.5 Presenting information/giving directions	1	2	3	4	5
4.6 Utilizing deductive, inductive thinking or problem solving	1	2	3	4	5
4.7 Questioning and responding	1	2	3	4	5
4.8 Utilizing audio-visual equipment and aids	1	2	3	4	5

5. Describe what you feel to be the strong points of the instructional behaviors based on your experience.

6. Describe what you feel to be the principal weaknesses of the instructional behaviors based on your experience.

7. List some suggestions for improvement.

8. All things considered, the instructional behaviors were:

    8.1 Excellent
    8.2 Good
    8.3 Fair
    8.4 Poor

(Select one of the above).

APPENDIX Q

BACKGROUND QUESTIONNAIRE

Appendix Q

Background Questionnaire

Name: ______________________________ Sex: M F
Last Name Given Names

University Address: ______________________ Phone: ____________

Home Address: ______________________ Phone: ____________

	University Program This Year	University Music Courses Completed
1.		
2.		
3.		
4.		
5.		

Place a circle around each high school grade in which you were enrolled in music.

7 8 9 10 11 12

Subject	Length of Study	Teacher's Name

What Music Examinations (e.g. Western Board) have you passed?

Subject	Institution	Grade Level

Are you self-taught on any musical instrument not mentioned above? Explain.

____

Describe your experience as a performer, director, or teacher in school, church, or elsewhere.

____

____

____